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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 15 Cents

Vol. LXVIII, No. 10 | 535 North Dearborn Street, CHICAGO, ILL. | MARCH 10, 1917

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Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Illinois, under Act of March 3, 1879.
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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. LXVIII, No. 10 CHICAGO, ILLINOIS MARCH 10, 1917

RESULTS OF TREATMENT IN HODGKIN'S DISEASE *

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In this summary of our clinical experience in treating sixty-three cases of Hodgkin's disease of certain diagnosis over a period of eight years, we shall exclude, so far as practicable, hypotheses and technical details. We offer an interpretation of the effects of our therapy that is to some extent both incomplete and unsatisfactory. Many of our patients began treatment comparatively recently, and approximate accuracy in the estimation of results depends on a series of well controlled observations extending over a period of at least five years. On the other hand, this is the largest series of cases reported from one group of observers, the only one that has been followed at frequent intervals by coordinated workers, consecutive records thus being obtained of variation in the blood picture, general physical condition and roentgenographic evidence. These observations, so far as possible, have been made independently in an effort to eliminate bias.

Pending the final determination of the cause, course and prevention of this disease, clinicians should have no less interest in its treatment; and this interest must be considerable since, next to tuberculosis, Hodgkin's disease is the commonest and most important disease of the lymphatic system.[1]

Whether one holds with the great majority that the disease is in nature inflammatory, or with the minority that it is neoplastic, concerns an individual sufferer but indirectly, provided every possibility of recovery is vouchsafed.

Our contention that the affection partakes *in effect* of the destructive potentialities of both a malign infection and a neoplasm[2] has been given practical trial in the methods of treatment employed, the appended results of which will to some extent determine the rationality of both.

CLASSIFICATION OF CASES

It is essential to group these cases according to the nature and stage of the process because the extremes, from a therapeutic point of view, are virtually incomparable. Years after Hodgkin's work indicated that he had discovered a clinical and pathologic entity, clinicians came to recognize acute and chronic forms, the former of from two to five months' duration, the latter lasting as many years. Much earlier Trousseau[3] had described three stages of the disease so accurately that his classification is the best available:

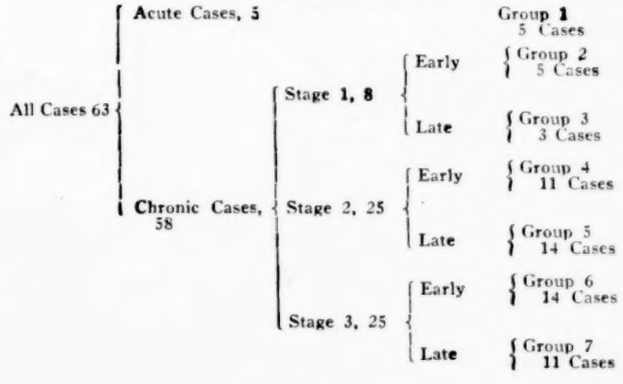
1. The latent stage, extending from the onset to the progressive stage.

2. The progressive stage, in which multiple more or less widely separated groups of glands become involved, so suddenly at times as to have been aptly termed explosive, but usually occurring gradually and ending after correspondingly variable intervals in the final or cachectic stage.

3. The cachectic stage, in which the peculiar progressive pallor and other signs of increasing physical and physiologic debility indicate that resistance and rehabilitation have been overcome permanently.

So great is the difference in the clinical picture at the beginning and at the end of these stages, that Trousseau's classification has been amplified, as indicated in the accompanying diagram. Our cases roughly fall into this grouping, but classification of individual cases according to this scheme is admittedly inaccurate and merely tentative.

CLASSIFICATION OF CASES



TREATMENT

After the reasons for treatment and the methods of treatment have been outlined, their application to each of the foregoing groups will be indicated and the results obtained stated.

General Principles.—At the beginning of this work a mortality of 100 per cent. was universally accepted, although there was lacking the record of a single exception to prove the rule. As experience increased, it was inevitable that methods of treatment should vary. Failures were distressingly frequent, but a few

* Read before the annual meeting of the Wisconsin State Medical Society, Madison, Wis., Oct. 4, 5 and 6, 1916.

1. Ziegler: Berl. klin. Wchnschr., 1911, **48**, 1917.

2. Yates, J. L., and Bunting, C. H.: The Rational Treatment of Hodgkin's Disease, THE JOURNAL A. M. A., June 12, 1915, p. 1953.

3. Trousseau: Clin. méd., 1865, **3**, 555.

successes in ultimate recoveries and in satisfactory palliation (prolongation of life with decreased discomfort and the maintenance of the patients' optimism) sufficed to show that eventually a more effective therapeusis was at least a developmental probability.

In addition to a conviction that the process was infectious, clinical studies brought a recognition of certain fundamental facts. The most significant of these in importance has hitherto escaped recognition. Although this disease is noncommunicable and very few individuals are susceptible, after the process is once well established, final spontaneous recovery seldom if ever occurs; yet throughout its course repeated and almost successful temporary defensive responses are manifested.

This was assumed to indicate that the infection is of low virulence, and that the affected individuals are incapable of a permanent protective reaction to this toxin, however it may be administered. These premises demand in therapeutic logic an early and adequate subtraction from the amount of the disease in order to place the balance of power emphatically and rapidly on the side of individual resistance and to maintain it there, through the elimination of every possibility of reinfection.

Further, this morbid process imitates the behavior of malign affections, notably of certain types of tuberculosis and of certain malignant neoplasms, especially the carcinomas, in so many details, as, for example, in modes of dissemination, in direct extension and in the nature of local and general resistance, that the nearly identical problems presented seem to demand the same solution. This is an additional indication for surgical intervention.

Finally, the rather numerous "cures" recorded in the literature, following an almost incredible number of methods of treatment, were without exception but temporary improvements. The improvement in the majority of instances occurred in spite of the treatment used, though in some doubtless it was fostered thereby.

Apparently a composite sequential series of treatments is demanded, including everything of proved or possible value, as it was quite out of the question, with one exception, to devise anything, however rational or irrational, that had not already been employed, all with the same ultimate results.

These conditions seemed to us to indicate the following methods:

1. To determine and to eliminate the portal or portals of entry of the infection, those chronic lesions of skin or mucous membrane pointed out by Trousseau in 1865 and curiously never rediscovered, never even given any practical recognition by therapeutists.

2. To extirpate so thoroughly all eradicable involved tissue in suitable cases as (*a*) to place the balance of power decidedly on the side of the individual instead of on that of the disease; (*b*) to eliminate this source of further infection and intoxication, and (*c*) to prevent subsequent physical and physiologic debility through the continued growth of this tissue in situ and consequent pressure and irritation effects on surrounding structures.

3. To keep the balance of power on the side of the patient (*a*) by improving general health through hygienic measures; (*b*) to prevent by radiation, by immune serum and by medication any extension of the disease, and (*c*) to repeat these treatments at intervals of a few months, unless other manifestations of progress of the disease, as determined by the patient's condition and especially by untoward changes in the blood picture, demand more frequent treatments or more radical interventions.

Three of these procedures require explanation.

It has long been held and frequently reiterated, notably of late years by Fischer[4] and Dorothy Reed,[5] that surgery, always of doubtful value, frequently was positively harmful, and that reexcisions were seldom if ever justifiable. These views were based on the repeated observations that local recurrences, usually prompt, were the rule after the excision; and, moreover, that these recurrences often assumed a type more acute than the original process and were prone to hasten rather than to retard death. We have seen such recrudescences appear within a week. The explanation is simple.

A portal of entry (inflamed tonsils, teeth, accessory sinuses, patches of dermatitis, bronchitis, enterocolitis, etc.) is comparable to a primary lesion in carcinomatous processes. The records of earlier, less radical surgical treatment show that these foci of dissemination were constantly neglected, and that therefore local reestablishment of the disease was a natural result, particularly since this affection seems limited at its inception to preexisting lymphoid tissue, only secondarily extending therefrom to invade directly other tissues. Consequently if, in addition to this neglect, the primary excisions are relatively incomplete (and according to our belief none is or can be actually complete in removing all potential lymphoid tissue[6]), and are not therefore followed immediately and at intervals thereafter by intensive Roentgen-ray treatments, distressing experiences of aggravation of the disease are almost certain to occur. In addition, the constant liability to septicemia must not be overlooked.

On the other hand, radical extirpations preceded by removals of portals of entry and followed by careful after-treatment have proved that in favorable (less advanced) cases local recurrence may be reduced to a surprisingly low percentage (possibly less than 5 per cent.), and that when they do occur under these conditions they are usually late and have assumed a much more chronic type of lesion. Such late lesions may be

4. Fischer: Deutsch. Chir., 1901, **24**, 104.
5. Reed, Dorothy: Johns Hopkins Hosp. Rep., 1902, **10**, 133.
6. So little is known of the number and distribution of lymphoid rests or of the redevelopment of lymphoid structures consequent on excisions that it is impossible as yet to make more than a conjecture as to the sequence of events after a wide, thorough extirpation. Clinical evidence indicates that following even the most thorough and radical excisions of cervical tissue, e. g., for tuberculosis or squamous cell epithelioma, recurrence in unmistakable lymph glands may develop in such numbers and in such distribution as to make it quite certain that either or both of such regenerative processes must have been operative. Years after the final local disappearance of Hodgkin's disease following radical excisions and Roentgen ray, we have seen a simple type of lymphadenitis occur in such areas in a perfectly natural fashion, following an inflamed tooth or a dermatitis of the scalp. Our observations suggest that present conceptions of the normal distribution and function of lymphatic tissue, or of the abnormalities developing under the stress of other types of involvement (tuberculosis or cancer) barely indicate the possibilities in these particulars, possibilities of infinite therapeutic potentiality. Direct and indirect evidence is found in abundance in human pathology to support Murphy's (Murphy, J. B., and Morton, J. J.: Jour. Exper. Med., 1915, **22**, 204) brilliant experimental observations and those of Theobald Smith (Jour. Med. Research, 1915, **32**, 455) indicating the significance of the lymphocyte as an index of local and general resistance to chronic malign affections, inflammatory and neoplastic. Hence our endeavors to protect all lymphatic tissue from infection, as the disease is prone to start in the germinal centers, and also to induce compensatory hyperplasia in actual or potential lymphoid rests. There is evidence that such hyperplastic tissue is not only hyperresistant itself, but also contributes materially to general resistance. For example, after multiple radical excisions with subsequent radiation done for palliation in a patient, there was an interval of months of such continued well-being without any superficial evidence of disease that hopes of recovery were entertained, though the intrathoracic portion of the disease did not improve. General resistance collapsed suddenly after a severe griplike infection. Recrudescences then appeared and developed rapidly in areas hitherto immune. In this connection the work of Murphy and his associates, and the earlier experimental observations of Heineke (Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1904-1905, **14**, 21) and of Warthin (Internat. Clin., 1906, **4**, 243) show the paramount importance of proper dosage of the ray. We have had no experience with radium, and will have none until it can be shown to give at least as good results as the Roentgen ray with no greater dangers.

excised safely under local anesthesia, but afterward the site of operation should be treated with the Roentgen ray as if this late procedure were primary.

We believe in the efficacy of extirpation because of examples of recovery following such treatment which we report below; moreover, we have personal knowledge that individuals showing similar forms of the disease and treated similarly by others but without excisions have succumbed after more or less temporary relief. In our experience fever has disappeared, and local general improvement has followed single and multiple extirpations — a result otherwise not obtainable. Two persons hopelessly ill have requested additional operations because of the period of subjective improvement following previous extirpations.

Once more we wish to emphasize the negative to these assertions: If extirpation is not to be complete, it should not be attempted. Meddlesome surgery in Hodgkin's disease is even more dangerous than in cancer. We believe that we have seen hopeless dissemination follow a simple "test excision," and therefore practice them only in doubtful cases, when prepared to follow a frozen section diagnosis immediately with a radical extirpation, or in exceptional cases when an accurate histologic estimation of the nature of the process is of sufficient value as an aid to therapeusis to balance the danger. Such wounds should be treated with the Roentgen ray immediately and repeatedly, as even in acute cases the liability to dissemination is thus reduced materially.

The use of an immune serum presupposes a final proof of the etiologic relationship of *B. hodgkini*. As we cannot offer that proof, we must justify the use of a serum on other grounds.

The administration of the serum when it is sufficiently potent has reduced temperature in certain febrile cases in a manner that seemed to prove it the cause of the defervescence. There has been in both febrile and afebrile cases an improvement in subjective symptoms that was absent when the serum was impotent. One patient was particularly susceptible to this benefit, and could estimate after a few injections the value of any particular supply. Variations in potency were noted in the serums obtained from different horses and at different times from the same horse, and could be estimated only by the effects noted clinically. There was no bactericidal action. However, agglutination and complement fixation tests of the several serums were positive, as a rule, but showed no variations corresponding to their clinical effect.

Whether given subcutaneously so as to filter directly through affected glands or administered intravenously, there occurred usually a fairly prompt and at times considerable enlargement of such glands. In one case with advanced mediastinal involvement, this acute tissue reaction produced a pupillary asymmetry and a dyspnea that was alarming. This reactionary enlargement soon subsides, as a rule leaving the glands smaller than before the administration was begun. Such tissue subsequently removed has failed, in the few instances in which this has been done, to give a positive culture. Negative cultures are the rare exception when the tissue shows the histologic changes of the disease. Patients who tolerate the serum seem to improve more rapidly and to receive more permanent benefits than from the same general treatment but without the serum.

Medication of this group of diseases has consisted since the days of Billroth in the administration of arsenic. It is without specific lasting virtue in any form yet available, from Fowler's solution to salvarsan. Some specific chemotherapy is urgently needed, but wanting this, fresh air, sunshine and proper feeding are infinitely superior to any drugs when there is no indication for tonics and the like.

APPLICATION OF TREATMENT TO GROUPS

Group 1, Acute Cases.—The blood picture, the most reliable single diagnostic evidence, is often obscured by the leukocytosis.[7] It is fortunate that the incidence of this type of the disease is comparatively slight, for it is about as amenable to treatment as is the mastitis carcinomatosa of lactation or melanoma. By the time a diagnosis is made, the outlook is usually hopeless because of the intense intoxication and extensive involvement. However, if this acute process could be converted promptly into a chronic type, ultimate recovery is conceivable, as will appear later.

In these acute types, periadenitis, comparable in its pathologic and prognostic significance to the penetration of gland capsules by cancer metastases, is both early and extensive. This periadenitis makes a satisfactory extirpation extremely difficult or more often impossible. Nothing less, however, promises even temporary relief, as this type of the disease is least responsive to radiation and typifies the rapid uncontrollable recrudescences that have been noted by all observers to follow so regularly in those "cures" obtained by the ray alone. This universal experience, fortified by our own results, has convinced us that mere reduction in the size of the gland masses should not be the primary object in treatment, but rather such therapy as, controlled by the blood picture, leads to an overcoming of the infection.

Group 2, Incipient Cases.—The blood picture is positive and early. In these instances the portal of entry has been recently established, and only a few adjacent glands are beginning to be palpable. Such early diagnoses of the disease are partly fortuitous and partly the result of (1) careful physical examination of patients complaining of nothing more serious than a lack of energy; (2) routine blood counting, and (3) an accurate interpretation of tuberculin tests. So far these early manifestations have been limited to the primary cervical variety of the disease. Tonsillectomy, careful exclusion or treatment of tooth or sinus troubles, roentgenotherapy and hygiene have sufficed to check the disease at this stage, even after test excisions have been made. Exceptionally, the entire demonstrable disease process may be limited to one tonsil and yet the toxemia be sufficient to produce the characteristic blood changes, and even a specific bacteremia may have occurred.

Group 3, Early Cases.—The blood picture is positive and still of the early type. There is unmistakable involvement of the primary group of glands, cervical, axillary or inguinal (the primary mediastinal and retroperitoneal varieties have not been recognized as early as this), but without demonstrable extension therefrom. In this group and every other more advanced group the occurrence of a specific bacteremia of some extent is virtually certain at one or more of the positive phases, though the toxemia alone is possibly capable of inducing an adenitis in both adjacent and remote lymphoid tissue. Elimination of a portal of entry, radical extirpation, roentgenotherapy and hygienic living have sufficed to relieve this uncommon type—uncommon because usu-

7. Bunting: Bull. Johns Hopkins Hosp., 1911, **22**, 248.

ally by the time one gland group is materially enlarged, extension to others has already occurred, at least at the time when advice is sought. It is unfortunate that too often patients of this and the preceding group are advised to temporize, or if the diagnosis is suspected are given arsenic and Roentgen-ray or radium treatments, and admonished to avoid surgery as a path to certain death. This attitude would be less open to criticism had any other method of treatment ever produced a cure even at this early stage.

Group 4, Moderately Advanced Cases.—The blood picture is positive but not of so early a type, that is, there are fewer lymphocytes, and a moderate eosinophilia has developed. More than one, sometimes all of the main superficial groups are diseased, but extension to the mediastinal or peritoneal glands cannot be more than suspected. These individuals show definite effects of intoxication and are slightly febrile, at least during periods of exacerbation. Eliminations of portals of entry and extirpation of the gland group or groups most involved may induce a permanent regression in other glands under proper radiation. Unless these secondary gland groups are but slightly enlarged and the patient's condition otherwise is indicative of no serious damage, the safest course is to proceed as rapidly as feasible with repeated extirpations to give maximal protection to inaccessible glands and to the lymphadenoid tissue in general. This should be followed by the usual secondary treatment. Even this early in the disease the protective and regenerative powers may be nearly exhausted, and quite probably are, in the patient having the peculiar intermittent, or Murchison type of fever. In all patients the margin of reserve power of resistance is reduced far more than is apparent. The individuals of this group are the ones who above all others change so suddenly from a relatively safe into a quite hopeless condition. After this "explosion" has occurred, an equally sudden and considerable increase in discomfort inspires these unfortunates with a tardy but now impelling desire for relief. They now submit willingly to the palliative measures far more trying than curative procedures would have been but a few weeks earlier.

Group 5, Advanced Cases.—The blood picture may be like the preceding, or may assume later features—a gradual reduction of nearly all cell forms, especially the lymphocytes, with a relative and actually neutrophilic increase. In these persons there is always a demonstrable involvement of deep structures, intrathoracic, intraperitoneal or both, frequently accompanied by more or less extensive involvement of multiple superficial gland groups. The difference between this and the preceding group in physical appearance may be slight, but commonly there are greater pallor, malaise and febrile reaction. Earlier it appeared that in this type palliation alone was obtainable; more recently there is evidence that recovery is occasionally possible. Radical extirpations, almost forbiddingly extensive, must be undertaken, and it is in this group that the administration of serum has seemed to make lesions responsive to treatment otherwise inefficacious. In the majority of these patients, in spite of relatively healthy appearance, the powers of recuperation and, possibly, of lymphoid regeneration have been so seriously and permanently depleted that were the entire Hodgkin's affection suddenly eliminated it is quite likely that the consequently lowered resistance to other types of infection, notably tuberculosis, would render long-continued existence improbable. Differentiation between this and the succeeding group is so uncertain that a complete explanation and apparent understanding of the exact condition by the patient must always precede any attempt at treatment.

Group 6, Cases Probably Hopeless but Capable of Palliation.—The blood picture is of late type; the lymphocytes are reduced (below 15 per cent.), but the platelets are still numerous and the leukocytosis not excessive (less than 25,000).

The patients are still active, and though considerable deep involvement is easily demonstrable, there appears to be such an abundance of physiologic vigor that prolonged relief, if not possible recovery, is conceivable. However, the margin of reserve power is always much narrower than it appears, and tissue regeneration, especially of the hematopoietic system, is nearly if not quite at the vanishing point. Here again treatment should not be undertaken without a frank understanding. If it were not for the great reduction in physical and mental distress usually obtainable, any radical treatment would be positively contraindicated.

Group 8, Cases with Lethal Involvement and Probably Beyond Palliation.—The blood picture is now of the very late character; the lymphocytes are below 5 per cent., there is a neutrophilic leukocytosis, and the platelets may disappear. Occasionally incomplete operations to relieve pressure distress are humane. Opium, scopolamin and cocain are the main reliances. It is remarkable how much reserve strength persists in this group when prolongation of life is regrettable. Unfortunately the number of patients seeking relief is greater in this group than in any other. This fact does not appear in our records, as a positive diagnosis can usually be made by letter, even when from a layman, and without making a blood count. Relatively few such patients come under our direct personal observation.

RESULTS

We have heretofore maintained that a recovery could be accepted only when a person had been free from all evidence of the disease, including a normal blood picture, for five years. This period exceeds so far as could be determined the longest free interval on record. In those rare instances of late recrudescence, the possibility of reinfection after a recovery has been established must be disregarded until the nature and methods of infection are determined absolutely, even though there is evidence of only incomplete temporary protective reactions.

Experience is still insufficient to determine the nature of a "normal blood picture" for individuals who have recovered *after* having had the disease develop beyond the incipient stage. The specific toxin has a selective action on hematopoietic tissues, wherein it provokes primarily a stimulative irritation and later produces progressive degenerative changes in these structures, from which regeneration becomes somewhat proportionately and increasingly impossible. Recovery occurring at any period, after complete regeneration is impossible, is bound to exhibit some evidence comparable to a cicatrix. It now appears that part of such evidence is more or less permanent impairment of the functions of lymphoblastic tissue. Hence a subnormal lymphocyte count need not of itself be indicative of a persistence of the disease, although suggesting reduced resistance, if the other features of the morbid blood picture have returned approximately to normal, as determined not by a single count but by a series of observations extending over several months.

During the first year after the institution of treatment, improvement, however remarkable, is of little or no prognostic value. The first year (and usually the first part thereof) has furnished virtually all of the "cures" recorded in the literature as the result of any methods of treatment.[8] Therefore the results of a year or less in duration will be termed "temporary." During the second year a more accurate judgment is possible, and the term "apparent" is justified, as is also the term "probable" during the third and fourth years. In the fifth year and thereafter, the ultimate results become relatively more certain, though final judgment must be reserved until a complete necropsy presents conclusive evidence years after recovery has been accepted clinically.

RESULTS BY GROUPS

GROUP 1.—Acute cases; five.

Four patients died in from one to four months; one primary retroperitoneal was discovered postmortem, the other three (two primary cervical and one primary mediastinal) were subjected to various treatments without checking the process. One case, primary cervical, has assumed a chronic type following tonsillectomy, extraction and treatment of teeth, multiple excisions and reexcisions, serum and Roentgen ray. Temporarily this patient is much improved and is still improving. Recovery is conceivable.

Estimated possibility of recovery, less than 5 per cent.

GROUP 2.—Incipient cases; five.

Two patients recovered, five years and over.

Two cases probable recovery, two years and over.

One case apparent recovery. In this patient the disease was limited to a nodule in one tonsil. Several months after tonsillectomy and Roentgen-ray exposures of the neck, symptoms suggesting extramedullary pressure on the tenth to the twelfth thoracic spinal segments developed. Relief finally followed serum administration and Roentgen-ray treatment of spine.

Estimated possibility of recovery, from 80 to 90 per cent.

GROUP 3.—Early cases; three.

One patient probably recovered. This patient has been under treatment eight years. His blood picture has never returned to normal and probably never will, but it is conceivable that the disease was eradicated five years ago.

One patient temporarily recovered.

One patient refused operation, and was treated elsewhere with vaccine and the Roentgen ray. Dead.

Estimated possibility of recovery, from 60 to 70 per cent.

GROUP 4.—Moderately advanced cases; eleven.

Two patients, recovery probable. Improvement during the past five years indicates that the disease is all but overcome.

One patient probably recovered.

One patient apparently recovered.

Five patients temporarily relieved; one of these now shows hopeless involvement.

One patient refused treatment.

One case, primary incomplete excision done elsewhere without previous tonsillectomy. Tonsillectomy; vaccine and Roentgen ray given, followed in a few months by a sudden recrudescence in an acute form. This was attributed, possibly unjustly, to the vaccine.

Estimated possibility of recovery, from 30 to 40 per cent.

GROUP 5.—Advanced cases; fourteen.

One patient probably recovered; case once appeared hopeless.

Three cases temporarily improved.

Three patients refused treatment; two dead, one dying.

Three cases are in terminal stages. All these patients refused intervention at a critical period when nothing less would benefit.

Two patients are dead; both were temporarily benefited, one (mentioned above) so greatly improved as to raise hopes of a recovery.

One patient has been subjected recently to an incomplete operation elsewhere.

One patient succumbed to operation.

Estimated possibility of recovery, from 5 to 10 per cent.

GROUP 6.—Very late cases, palliation still possible; fourteen.

Three patients declined to begin treatment. All are dead.

Three patients refused to continue treatment. One dead, two dying.

Four patients survived but a few (from eight to twelve) weeks. All were temporarily improved and for a time appeared to gain. This type without reserve power would be subjected to no treatment were it possible to estimate actual conditions.

Three patients have had from three to twelve months of hope and comfort; two are still active and optimistic. Two of these appeared to be weaker than three of the preceding four patients who responded less.

One patient died during operation.

Estimated mortality, 100 per cent.

GROUP 7.—Lethally involved cases; eleven.

As stated above, this would be the largest group if it included those who have consulted by letter.

Two palliative operations were attempted: one, a mediastinal decompression which was never begun, as the patient died during the induction of anesthesia; the other, an axillary decompression, which was very gratifying in its relief.

This group included at least two primary mediastinal cases.

Mortality, 100 per cent.

COMMENT

We regret the impossibility of giving more exact figures as to ultimate recoveries, but as 67 per cent. of these patients have come to us within the last two years, and as our work before that time was less standardized, the reason is obvious.

Apparently greater benefits are being obtained as experience increases and methods and judgment improve. We are of the opinion that in about 20 per cent. of all cases as we see them recovery is a possibility at present.

Earlier diagnoses, and the recognition that Hodgkin's disease, if treated promptly and radically, is curable would raise this percentage materially without any change in the treatment outlined above. More definite laboratory and clinical knowledge of this disease as a morbid physiologic process, and clearer conceptions of the defensive mechanisms which combat it, are needed to further an effective rational therapy.

8. We have been unable to learn of a single permanent recovery from the disease except those herein recorded, where a positive diagnosis has been made by other than clinical methods of physical examination. Tuberculous lymphadenitis can imitate Hodgkin's disease too accurately to be differentiated except by the morbid histology, and such examples are too common to be disregarded. We assume that the constant failure of the exponents of any method of treatment to make subsequent reports of their patients who improved primarily or to record consistent improvement leading to recovery in other individuals must be accepted as evidence of the inefficacy of those methods.

Average Filipino Food Ration.—The food or ration now used by the average Filipino family is poorly balanced and lacking in nutritive properties, and is poorly prepared and served. It is poorly balanced in that the preponderant element is rice, polished, and as a rule of inferior quality. The protein element, particularly as regards animal protein, is lacking. There is also an insufficiency of fat, and vegetables and fruits are not used in anywhere near the proportions in which they should be used. The food as a rule is poorly prepared, insufficiently cooked, and improperly served; it is eaten in a great majority of instances with the fingers by dipping into a common dish, and meals are at irregular intervals.—J. D. Long, Reprint No. 371, *Public Health Reports*, Oct. 27, 1916.

THE COLLOIDAL GOLD REACTION OF THE CEREBROSPINAL FLUID IN ACUTE POLIOMYELITIS *

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The careful work of Peabody, Draper and Dochez,[1] in 1912, leaves little to be said, from a diagnostic point of view, concerning the cerebrospinal fluid of patients suffering from acute poliomyelitis. Abramson,[2] in 1912, and Neal[3] and Klein[4] in the recent New York epidemic obtained substantially the same results. Inasmuch, however, as the fluid from such patients has given uniform and significant reactions with Lange's colloidal gold, it has been thought worth while to record the results of the application of this test, as a further contribution to the laboratory knowledge of the spinal fluid in this disease.

The recent small epidemic in Baltimore afforded an opportunity to obtain spinal fluid from a number of patients with poliomyelitis. One of us had the opportunity of doing lumbar punctures on most of the suspects reported to the city health department, as an aid in establishing the diagnosis. Fluids in several early cases were thus obtained. A few were taken in cases diagnosed in the outpatient department of the Harriet Lane Home. The majority were patients held in the Children's Hospital School, the institution utilized by the city for the isolation of poliomyelitis patients. There the spinal fluids were obtained through the kindness of Dr. Rosenthal, the physician in charge.

No case in which the diagnosis was doubtful has been included in the series. All the patients showed paralysis in some form or had presented the typical clinical syndrome with the characteristic spinal fluid findings.

TECHNIC

Each cerebrospinal fluid was subjected to the following tests:

1. Cell count was made immediately after withdrawal of the fluid, when possible, and always within two hours.

2. The globulin-albumin content was estimated by means of the Pandy and the Ross-Jones methods. The usual technic was used both in preparation of the reagents and in the application of the tests.

3. The Wassermann reaction was done with 0.25 and 0.5 c.c. quantities with two antigens: A, plain alcoholic beef-heart extract, and B, cholesterinized alcoholic beef-heart extract. Antigen A bound 100 per cent. with a known positive syphilitic serum in dilution 1:400 and was not anticomplementary 1:5. Antigen B found 1:900 and was anticomplementary 1:5; used in dilution, 1:20.

4. The technic of the colloidal gold test both in the preparation of the gold solution and the carrying out of the test was the same as advised by Miller, Brush, Hammers and Felton,[5] to whose paper those not acquainted with the details of the test must refer, excepting two slight modifications used in the preparation of the gold solution: (*a*) in distilling the water there was added to each liter of the first distillate 5 c.c. of a saturated solution of barium hydrate. By this method the necessity of absolutely fresh *first* distillation was done away with. In fact, we have used with uniformly good results the single distillation of the day before; (*b*) in the use of oxalic acid, 1 drop of a 1 per cent. solution to the liter was added at 60 C., instead of 10 drops at 85 C.

The gold solution used was absolutely clear to direct and transmitted light.

Five c.c. of the solution were completely precipitated by 1.7 c.c. of a 1 per cent. sodium chlorid solution in one hour.

The entire series was tested by a single lot of gold solution, which on each day used gave a brownish-red color after the addition of 2 drops of alizarin red to 5 c.c. Too much emphasis cannot be laid on this point. Slight changes in the reactions of the reagent give widely diverging results.

The solution gave a typical reaction with a known paretic cerebrospinal fluid and absolutely negative reaction with four different known negative fluids.

RESULTS

Fifty-seven fluids from patients with poliomyelitis have been tested. These have been grouped into three tables according to the stage of the disease. Three fluids from normal children which were used as controls have been included, one being shown in each table. The cases in each table are arranged in order according to the day of the disease.

Table 1 is made up from fluids obtained during the acute illness. Of these cases, one (H. L. H. No. 10153) was nonparalytic; two (O. S. 7 and O. S. 4) were preparalytic; and in the rest, the paralysis was either progressing or just arrested. The gold chlorid curve given in these cases is singularly constant and occurs in the so-called "luetic zone." Flocculation begins in the first tube in all but one, and reaches the maximum in from 1:40 to 1:160, in two instances persisting into 1:320. Decolorization usually proceeds as far as "blue."

In other words, in these fifteen cases in the acute stage of the disease, thirteen react with colloidal gold in the "luetic zone," and two (O. S. 7 and O. S. 5) show a slight tendency to precipitate in the higher dilutions, suggestive of the meningitic zone.

Johnston[6] has recently published an article in which he used the colloidal gold test in four cases of acute poliomyelitis, the day of the disease not being mentioned, in which the reaction took place in the "luetic zone." That the reaction is not so transient a one as his work would seem to indicate is shown in Tables 2 and 3.

After the subsidence of the acute illness, as is well known, the cells tend to decrease in number very rapidly, but the globulin content may increase. Corresponding to this, we often found in the ensuing two weeks (from the eighth to the twenty-first day) a tendency for the gold to show more pronounced flocculation in the first tubes and to decolorize more intensely in the higher dilutions. This is well shown in Table 2. The gold chlorid curve for the period, consequently, may show a "meningitic curve," as is

* From the Laboratory of Immunology and Bacteriology and the Department of Pediatrics, the Johns Hopkins University, Medical Department.

1. Peabody, Draper and Dochez: Jour. Exper. Med., Monograph 4, June 24, 1912.
2. Abramson, H. L.: The Spinal Fluid in Poliomyelitis and Its Differentiation from Fluids of Other Infections, Am. Jour. Dis. Child., November, 1915, p. 344.
3. Neal: New York Med. Jour., 1916, **104**, 167.
4. Klein: New York Med. Jour., 1916, **104**, 219.
5. Miller, S. R.; Brush, N. D.; Hammers, J. S., and Felton, L. D.: A Further Study of the Diagnostic Value of the Colloidal Gold Reaction, Together with a Method for the Preparation of the Reagent, Bull. Johns Hopkins Hosp., 1915, **26**, 391.
6. Johnston, M. R.: A Study of Normal and Pathologic Cerebrospinal Fluids in Children, Am. Jour. Dis. Child., August, 1916, p. 112.

illustrated by Case R. G. 3. One of the cases included in this table (P. 98) gave a "paretic" curve. The fact that the spinal fluid and blood of this child gave a positive Wassermann reaction might explain this reaction, although clinically there seems to be no sign of juvenile paresis.

From the third week, there is a strong tendency for the spinal fluid to clear, the cell count having returned to normal, and the globulin gradually disappearing. The change has appeared in the gold chlorid reaction as early as the eighth day, but this is unusual. The first normal fluid encountered in our series was on the thirty-second day (P. 83), and we often found strong reactions as late as the eighth week after the onset, as is well shown by Case P. 83, which shows precipitation in the higher dilutions on the fifty-second day. In the main, however, "luetic zone" reactions are encountered, and they persist and may be found as late as eight weeks after the onset of the disease. These facts are brought out by the study of Table 3.

In view of the foregoing significant reactions in the colloidal gold test, and from facts as tabulated in the recent work of Miller, Brush, Hammers and Felton[5] and other workers, showing that clinical syndromes besides syphilis may give typical zonal reactions, and also because of the objections raised by the clinician that these terms are rather confusing, it is suggested that instead of the "paretic," "luetic" and "meningitic," the terms "first," "second" and "third" zones be used. This would allow an exact description of the reaction without suggesting a probable etiologic relationship, and enable the clinician from his general knowledge of the reaction to correlate the laboratory with the clinical findings in arriving at a more exact diagnosis.

The term "paretic zone" does not have the objection that is so manifest in "luetic zone," inasmuch as the precipitation in zone occurs practically only in paresis, tabes dorsalis and multiple sclerosis.

Regarding the "luetic zone" the following references are significant: Debeneditti and Olivero,[7] in a series of thirteen cases of tuberculous meningitis, give three in the "luetic zone." Eicke[8] states that early tuberculous meningitis gives a reaction in dilutions from 1:40 to 1:80. Grulee and Moody[9] give several reactions in the "luetic zone" in conditions other than syphilitic. Johnston[6] gives several miscellaneous fluids reacting in the "luetic zone." In the compiled table of Miller, Brush, Hammers and Felton, 204 cases in the miscellaneous group, out of 1,808, give a precipitation in the "luetic zone." From these data, together with the series of fifty-seven cases of acute poliomyelitis here described, and the four cases described by Johnston,[6]

TABLE 1.—ACUTE STAGE, FIRST WEEK

No.	Name	Age, Years	Day of Disease	Cells per C.mm.	Ross-Jones	Pandy	Wassermann Reaction, Antigen A .25	A .5	B .25	B .5	Colloidal Gold Reaction, Dilution of Cerebrospinal Fluid 1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	1:2,560
H. L. H.	Catherine S..	5	3	70	+	+	0	0	0	0	1	1	1	2	2	1	0	0	0
O. S. 1	Christy.....	1½	3	135	+	+	0	0	0	0	1	1	2	3	3	1	1	0	1
O. S. 2	James M.....	2	3	110	+	+	0	0	0	0	1	1	2	2	1	1	0	0	0
O. S. 6	Ernest C.....	1½	3	70	+	+	0	0	0	0	1	1	2	3	3	1	0	0	0
O. S. 7	Robert S.....	4	3	45	+	+	0	0	0	0	1	2	2	3	3	3+	2	1	0
P. 103	Korsunsky...	3	3	130	±	+	0	0	0	0	1	1	2	2	1	1	0	0	0
O. S. 3	Lillian W....	2	3	1	++	+++	0	0	0	0	1	1	2	2	1	1	0	0	0
O. S. 4	Charles M....	3	4	81	+++	++++	0	0	0	0	1	1	2	2+	2+	2	1	0	0
O. S. 5	Marjorie M..	3	4	10	+++	++++	0	0	0	0	1	1	2	3	3	1	1	0	0
O. S. 8	Thelma G....	2	4	65	+	+	0	0	0	0	0	1	2	3	2	1	0	0	0
O. S. 1	Christy N....	1½	4	123	+	+	0	0	0	0	1	1	1	2	1	1	0	0	0
P. 101	Benj. D.....	1½	4	32	±	+	0	0	0	0	1	1	1	2	2	1	0	0	0
R. G. 1	Eugene N....	2	5	30	+	+	0	0	0	0	1	1	2	3	3	2	1	1	0
H. L. H. (10153)	Birtzal.....	¾	6	170	±	±	0	0	0	0	1	1	2	2	2	1	0	0	0
O. S. 9	Adrian M....	2	6	25	++	++	0	0	0	0	1	1	2	3	2	1	0	0	0
H. L. H.	Pollock.....	4	0	5	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0

TABLE 2.—DISEASES IN SECOND AND THIRD WEEKS

No.	Name	Age, Years	Day of Disease	Cells per C.mm.	Ross-Jones	Pandy	Wassermann Reaction, Antigen A .25	A .5	B .25	B .5	Colloidal Gold Reaction, Dilution of Cerebrospinal Fluid 1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	1:2,560
P. 99	Davis.....	21mo.	9	70	++	++	0	0	0	0	2	2	2+	3+	3+	2+	2	1	0
P. 101	Droatman....	18mo.	9	5	+	+	0	0	0	0	+	+	1	1	1	+	0	0	0
R. G. 8	Thelma G....	14mo.	10	33	+	++	0	0	0	0	2	2+	3	3+	3+	3+	2	1	0
H. L. H. (12069)	Edw. J.....	2	10	20	+	++	0	0	0	0	2	2	2	2+	2+	1	0	0	0
P. 103	Korsunsky...	3	10	8	+	+	0	0	0	0	+	+	+	1	+	0	0	0	0
P. 98	Bayton.....	4	11	11	++	++++	25-50%		25-75%		5	5	5	3	2+	2	2		
H. L. H. (12574)	Gladys B.....	8mo.	11	20	+	+	0	0	0	0	1+	1+	2	2+	2+	1	+	0	0
P. 104	Christy.....	15mo.	11	2	+	++	0	0	0	0	0	+	1	1+	2	+	0	0	0
O. S. 6	Ernest C.....	15mo.	11	1	+++	++++	0	0	0	0	2	2	2	2	3	3	2	1	0
P. 96	Herbert L...	8	14	6	+	+	0	0	0	0	1	1	2	2	1	1	0	0	0
P. 101	Droatman....	18mo.	14	2	++	+	0	0	0	0	1	1	1+	2	2	1	+	0	0
H. L. H (12574)	Gladys B.....	8mo.	18	2	++	++	0	0	0	0	1	1	1+	2	2	1	+	0	0
P. 81	Maffel M.....	15mo.	21	4	+	+	0	0	0	0	2	2+	3	3	2+	2	1	0	0
P. 95	Banks G.....	8mo.	22	12	+	++	0	0	0	0	2	2	2+	4	3	3+	2	1	0
H. L. H.	Woolford....	3	0	3	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0

7. Debeneditti and Olivero: Riforma med., 1914, **30**, 906.
8. Eicke: München. med. Wchnschr., 1913, **60**, 49, 2713.
9. Grulee, C. G., and Moody, A. M.: Lange's Colloidal Gold Chlorid Test on the Cerebrospinal Fluid in Congenital Syphilis, THE JOURNAL A. M. A., July 5, 1913, p. 13.

it no longer seems desirable to continue the use of the term "luetic zone."

The term "meningitic zone" is not open to such strong objection as the others, inasmuch as it is but rarely that other conditions give curves simulating it. However, for uniformity's sake, we feel that it could well be called the "third zone."

CONCLUSIONS

1. In the acute stage of poliomyelitis, the spinal fluid reacts with colloidal gold in dilutions of from 1:40 to 1:160, producing a maximal decoloration of 3 ("blue").

2. In the second and third weeks the reaction is practically the same as in the acute stage, with a tendency to clear up in some cases and a precipitation in the higher dilutions in others. There is no constant rule.

3. In the fourth to the eighth week the colloidal gold reaction runs practically to the globulin-albumin content, persisting in some cases to the eighth week and beyond, but still occurring in dilutions of from 1:40 to 1:160.

4. As the spinal fluid in acute poliomyelitis reacts constantly in the same zone, the gold chlorid reaction is helpful in the diagnosis of this disease.

5. We deem it advisable to use the following nomenclature in reading the reactions of Lange's colloidal gold test:

(*a*) Zone 1 (or paretic zone), maximum precipitation from 1:10 to 1:160, with complete decolorization.

(*b*) Zone 2, maximum precipitation from 1:40 to 1:160, with decolorization up to 4 (light blue).

(*c*) Zone 3, maximum precipitation beyond 1:160.

TABLE 3.—CONVALESCENT STAGE, FOURTH TO EIGHTH WEEK

No.	Name	Age, Years	Day of Disease	Cells per C.mm.	Ross-Jones	Pandy	Wassermann Reaction: Antigen A .25	A .5	B .25	B .5	Colloidal Gold Reaction: Dilution of Cerebrospinal Fluid 1:10	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	1:2,560
P. 93	Herbert.....	8	22	18	++	++	0	0	0	0	1	1	2	2	2	1	0	0	0
P. 71	Lloyd B.....	3	27	1	+	+	0	0	0	0	1	1	1	2	2	0	0	0	0
P. 100	Norman D...	3	28	4	++	++	0	0	0	0	1+	2	2+	2+	2+	2+	2+	1	0
P. 65	John J.....	8mo.	28	4	+	+++	0	0	0	0	1	1+	1+	3	2	1	0	0	0
P. 91	Malcolm S...	3	28	2	0	+	0	0	0	0	1	1	1+	2	2	1	0	0	0
P. 94	Elmer L.....	6	29	3	+	+	0	0	0	0	+	1	1+	1+	1	+	0	0	0
P. 74	Mildred W...	9mo.	31	15	++	++	0	0	0	0	1	1+	2	2+	1+	1	+	0	0
P. 83	James E.....	3	32	4	0	0	0	0	0	0	0	0	0	+	0	0	0	0	0
P. 100	Norman D...	3	32	4	+	+	0	0	0	0	1	1+	1+	2	2	1	0	0	0
P. 84	Luber F.....	3	35	2	+	+++	0	0	0	0	1+	1+	1+	2	1	1	0	0	0
P. 47	Emily W.....	6mo.	37	4	++	++	0	0	0	0	1	1	1	2	3	2	1	1	0
P. 56	Dillalumt.....	21mo.	39	8	0	0	0	0	0	0	+	+	+	0	0	0	0	0	0
P. 58	Hoffman.....	6	39	3	+	+++	0	0	0	0	2	2	2	2+	3	3	1	1	2
P. 68	Fisher.....	3	39	1	+	+	0	0	0	0	+	1	1+	1+	1	+	0	0	0
P. 70	Alfred E.....	6	39	1	++	++	0	0	0	0	+	+	1	2	2+	2	+	0	0
P. 46	Gladys D.....	4	40	2	++	++	0	0	0	0	0	0	+	1	1	+	0	0	0
P. 42	Kathrine W..	2	40	4	+	+	0	0	0	0	1	1+	2	2	2	1+	1	0	0
P. 30	John B.....	10	42	6	++	+	0	0	0	0	0	+	1+	2	1	+	0	0	0
P. 37	Lillian L.....	2	42	6	++	++	0	0	0	0	1	1	2	2	2+	1	0	0	0
P. 45	Anna V.....	4	42	4	+	+	0	0	0	0	1	1	1+	2	2	1	0	0	0
P. 43	Susie B.....	2	42	13	+	++	0	0	0	0	0	+	1	1+	+	0	0	0	0
P. 55	Benj. B.....	15mo.	44	1	0	+	0	0	0	0	1	1	2	1	1	0	0	0	0
P. 32	Naomi L.....	1	46	2	++	++	0	0	0	0	1	1	1+	2	2+	2	1	+	0
P. 26	Dorothy H...	4	50	2	++	++	0	0	0	0	1	1+	2	2	1+	+	0	0	0
P. 27	Carr.....	3	52	3	+	+	0	0	0	0	1	1+	2+	3	3	1+	1	0	0
P. 17	Eshbury.....	15mo.	52	4	+	+	0	0	0	0	1	1	1	1	1+	2+	3	0	0
P. 19	Mildren.....	3mo.	54	3	+	+	0	0	0	0	1	1	2+	2+	1	0	0	0	0
P. 16	Mary B.....	4	45	3	+	+	0	0	0	0	1	1+	3	3	2	1	1	0	0
P. 99	William M...	2	0	2	0	0	0	0	0	0	1	1	1	1	0	0	0	0	0

A Pessimistic View of Man.—What a chimera, then, is man! what a novelty, what a monster, what a chaos, what a subject of contradiction, what a prodigy! A judge of all things, feeble worm of the earth, depositary of the truth, cloaca of uncertainty and error, the glory and the shame of the universe!—Pascal, Thoughts.

CLINICAL STUDY OF FOUR HUNDRED CASES OF ANTERIOR POLIOMYELITIS *

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My object is to present the observations obtained by a close study of 400 cases of anterior poliomyelitis of the 1916 epidemic, seen at the clinic of the Hospital for Deformities and Joint Diseases.

These cases made their appearance at an average of about ten weeks after onset of illness, and show: (1) regional distribution; (2) a large amount of cranial nerve involvement; (3) muscular distribution; (4) unreliability of the reaction of degeneration to permit judgments concerning the extent of muscle paralysis, and (5) numerous deformities.

1. Of the entire series, thirty-two patients, or 8 per cent., showed no evidence of muscle paralysis. Of the remaining 368 patients, 286, or 78 per cent., showed some involvement in the lower extremities. Thirty-eight per cent. showed involvement of only one limb. Of this number, 10 per cent. were of the upper extremity and 28 per cent. of the lower. In 20 per cent. of the cases there was some form of trunk paralysis, showing that it has been quite a common occurrence. The right and left sides of the body were equally attacked.

The extent of paralysis differed from a part of one leg to an involvement of both legs, both arms, both sides of the abdomen and back, and also the larynx, which is slight. Between these two extremes there was seen every conceivable type of combination obtainable. Table 2 illustrates this very clearly.

2. In fifty-one cases, or 13 per cent., the cranial nerves were involved. In six cases, two different nerves were involved at the same time. The fifth nerve was affected 1 time; the sixth nerve, 1 time;

* Read before the Clinical Society of the Hospital for Deformities and Joint Diseases, Dec. 28, 1916.

the seventh nerve, 38 times; the tenth nerve, 4 times, and the eleventh nerve, 13 times.

3. In past epidemics, it seems that the muscles most often attacked in the leg were the peroneals; during the present epidemic it has been the tibialis anticus and quadriceps extensor which have most often suffered.

TABLE 1.—REGIONAL DISTRIBUTION

Region	No. Cases Involved	No. Parts Involved	Right	Left	Involved Alone	Involved In Combination
Leg	286	437	207	230	183	103
Arm	111	139	72	67	45	66
Face	38	...	19	19	24	14
Abdomen	46	79	35	44	1	45
Back	53	91	44	47	...	53
Neck	3	4	3	1	...	3
Sternomastoid	2	...	...	2	...	2
Larynx	3	...	...	...	...	3
Palate	3	...	...	...	...	3
Jaw	1	...	...	...	1	...
Eye	1	...	...	...	...	1

In the arm, the discrimination for the deltoid is again shown, followed by the pectorals, etc. (Table 3).

Not all the muscles were completely paralyzed, as there was some degree of motion in about 25 per cent. of all muscles involved.

The most frequent combination of muscles attacked in the leg has been those supplied by the anterior tibial nerve.

In the thigh, the quadriceps, adductors and hamstrings have shown a distinct tendency to be involved together (a mixture of both the lumbar and sacral plexuses).

When the external rotators of the hip were involved, the internal rotators always accompanied them. In no case were they affected alone. In the arm, the deltoid, pectoralis major and latissimus dorsi have been closely associated in paralysis. The latissimus dorsi

TABLE 2.—EXTENT OF PARALYSIS

One leg	111
Both legs	72
One arm	41
Both arms	4
All extremities	5
Three extremities	9
Arm and leg (same side)	6
Arm and leg (opposite side)	5
Trunk	2
Face alone	24
Jaw	1
Arm, leg, face (left)	1
Leg and back*	21
Leg and abdomen*	10
Leg, abdomen and arm*	10
Leg, abdomen and back*	6
Leg, back and arm*	6
Arm and back*	2
Arm and abdomen*	2
Leg and face*	5
Arm and face*	2
Leg, arm, back and neck*	2
Leg, arm, back and abdomen*	8
Leg, back, abdomen and larynx	2
Arm, palate and face*	1
Leg, palate and face*	1
Face and eye*	1
Leg and sternomastoid*	1
Arm, face and sternomastoid*	1
Arm, back and abdomen*	1
Leg, arm, abdomen and face*	1
Leg, arm, abdomen, face and back*	1
Leg, arm, abdomen, back and neck*	1
Leg, arm, abdomen, back and larynx*	1
Leg, arm, abdomen, back and palate*	1
Cases showing no paralysis	32
Total	400

* It may be one or both in any of the parts affected; in order not to lengthen the list, this is not specified.

was affected in fifty-one cases, and in fifty of these the foregoing took place. The "upper arm type" or the "forearm type" of paralysis did not occur in any instance.

4. To judge the extent of muscle paralysis by the reaction of degeneration is entirely fallacious. Muscles showing absolutely no action have given normal electrical reactions both to faradic and to galvanic currents. Some, with partial motion, showed various degrees of electrical degeneration, and in one or two instances, a complete reaction of degeneration was obtained, that is, failure to respond to faradism (moderate strength) and also to galvanism at 15 milliamperes both to the cathodal and to the anodal closing and opening currents.

Whether a true prognosis as to ultimate recovery may be given judging by the reaction of degeneration will be brought out in a later paper.

5. In only a few instances, comparatively speaking, was the deformity of talipes equinus encountered. Of the others, especially in the upper extremity, there were many.

Too much stress cannot be laid on the prevention of deformity.

It must be borne in mind that practically every group of muscles has an antagonistic group. The

TABLE 3.—MUSCULAR DISTRIBUTION

Muscle	Involved	Partial	Complete
Tibialis anticus	369	101	268
Quadriceps extensor	302	78	224
Peronei (longis and brevis)	251	62	189
Hamstrings	222	77	145
Gastrocnemius and soleus	215	52	163
Extensor longus digitorum	215	66	149
Extensor longus hallucis	215	65	150
Adductors	205	44	161
Internal rotators	173	18	155
Tibialis posticus	171	10	161
Iliopsoas	147	55	92
Gluteus maximus	127	32	95
Flexor longus digitorum	97	29	68
Flexor longus hallucis	97	29	68
External rotators	76	18	58
Deltoid	119	37	82
Pectoralis major	88	25	63
Triceps group	65	30	35
Biceps group	58	24	34
Latissimus dorsi	51	10	41
External rotators	43	1	42
Extensor communis digitorum	34	18	16
Internal rotators	31	3	28
Supinator longus and brevis	26	5	21
Flexor carpi radialis and ulnaris	22	11	11
Extensor longus pollicis	22	12	10
Flexor sublimis and profundus digitorum	20	10	10
Pronator teres (group)	19	6	13
Flexor longus pollicis	16	8	8
Extensor carpi radialis longior and brevis, and extensor carpi ulnaris	15	8	7
Serratus magnus	11	3	8
Trapezius	9	5	4
Rhomboid group	4	...	4
Thenar eminence	3	...	3
Lumbricales and interossei	2	...	2
Abdomen	79	28	51
Back	91	36	55
Face	38	12	26
Neck	4	2	2
Larynx	3	3	...
Palate	3	3	...
Jaw	1	1	...
Sternomastoid	2	2	...
Eye	1	1	...

flexors have the extensors, the inverters, the everters, the abductors, the adductors, the internal rotators, the external rotators, etc.

The possibility of flexion deformity at the knee, hip, fingers, wrist and elbow are just as favorable as one at the ankle (talipes equinus).

A healthy lattissimus dorsi with a paralyzed deltoid will do just as much damage in the shoulder as a healthy gastrocemius and soleus muscle with a paralyzed tibialis anticus will do in the ankle.

Nearly every patient having tibialis anticus paralysis had either a posterior splint or some other form of retentive apparatus to prevent the deformity of talipes equinus. Yet there was absolutely no appliance of any sort to prevent a paralytic deformity in: (1) 90 per cent. of shoulder patients having deltoid paralysis; (2) those having a paralysis of half the neck; (3) those having a paralysis of half the back; (4) those in whom the abdomen was completely paralyzed and

the children walk with extreme lordosis; (5) those having a paralysis of the internal rotators of the hip with good strong external rotators, and (6) those in whom the calf muscles were paralyzed and the children walked on their heels.

Why more importance should be attached to a prevention of talipes equinus than to any other form of deformity, which often proves of a more serious nature, is incomprehensible. One deformity is as bad as another, if not worse.

Any joint in the body in any of its functional directions may be the seat of deformity.

Every deformity results in stretched muscles which markedly lessen the patient's chances for recovery, a state of affairs entirely unnecessary and easily prevented.

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FALLACY OF DENYING FUNCTIONAL SIZE CHANGES IN NERVE CELLS FROM COLLECTIVE CELL AVERAGES *

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Kocher[1] has recently published several papers which make a sweeping denial of any morphologic evidence of functional activity in nerve cells. He bases this conclusion chiefly on his failure to find constant differences in the average size of cells between exercised and undisturbed animals. In these measurements, he employed the polar planimeter, which gives from camera lucida outlines the exact area of cells in microscopic sections.

It became necessary for me[2] to test my own positive results for functional activity by this method, particularly since Kocher's destructive criticism was directed mainly at myself. From long experience, however, with the polar planimeter in calculations from individual cell reconstructions, there was no reason beforehand to expect any important differences.

The planimeter was tested, not by averaging all cells measured from any region irrespective of their functional stage, as Kocher did (collective averages), but by applying it to the same number of cells from every functional stage. Data of diameter measurement with volume estimation, which has been my method, were obtained concurrently from the same series from an exercised and control animal, in order to compare the two methods. A graphic charting of the data shows that the two methods afford results absolutely identical in every detail, both in size and in nucleus-plasma relations. Previous conclusions for functional size changes and species size relations are verified.

The value of the planimeter method is as a mutual check on the diametral method. Alone it has no special or superior value; but since it gives only two dimensions, with smaller variations than in volume calculations, it is quantitatively misleading.

Kocher's method, therefore, has no peculiar applicability in settling the problem. It remains to point out that his handling of the data by means of collective averages, which has been in fact the usual procedure, involves just the inconstant results which he obtained. If one measures the individual stages correlated as functional, he will find very wide variations in their size in any cell type in the same animal. For example, the stages of shrinkage first described by Hodge[3] are only one-half the area and one-fourth the volume of cells approaching chromatic exhaustion. The resting cell type is only one-half the volume of the initial enlargement of function. In their function, cells first enlarge, then they shrink, and from that shrinkage progress to a secondary enlargement. Is it not obvious to any one that when two animals are compared on this basis of averaging all cells together, the result depends on the distribution of cells and a wide range of results is possible? The comparison may or may not prove anything about the functional state. It is possible in two combinations of cells closely related in degree of function that one would run smaller, the other larger than the average.

In illustration, Hodge found a smaller size in the stimulated ganglion as compared with the unstimulated, because the majority of cells were in a state of shrinkage. But as they pass from this state of shrinkage to a progressive hypertrophy in prolonged stimulation, enough of these larger cells would first equalize a comparison, and then turn the average the other way. So Kocher did not consistently obtain Hodge's results. Yet, as a matter of fact, accepting the smallest differences, he did duplicate Hodge's results in eleven out of fifteen series from the spinal cord and associated ganglia, and the exceptions which misled him follow to a noticeable degree the explanation given.

Further, as Kocher dealt with areas and ignored the third dimension, it follows that there was less range of variation in the quantitatively smaller area figures, and the averaging had smaller differences to smooth out in the same animal. That is, a preponderance of large cells or of small cells would have less effect.

It is not a matter of chance that the cell sizes in Kocher's case approximated each other so closely in contrasted animals, but an actual basis can be stated for it. This is the tendency to a uniformity of absolute size for corresponding nerve cells of a species. For this the theoretical basis is that function is the sole determinant of absolute size in such a specialized cell. It is understandable on the basis of average general functional usage. The exceptions thereto so far have been the functional oversize, the functional hypertrophy and the functional undersize, the atrophy, used in this general sense to include functional disuse, depression effects, and lack of functional development. It makes the nerve cell agree with Conklin's[4] conclusion that within the same species cell size is practically constant. It is admittedly not demonstrated in the great number of individual instances required as an induction. But Kocher's small differences between an animal and its control are understandable on this basis, and the results, so far as they prove anything, confirm the tendency to this size uniformity. The induction relates specifically to the resting cell type, but the distribution of functioning cell sizes above and below it would make the averaging of all cells approximate a common size. Certainly, such results do not con-

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* Read before the American Association of Anatomists, New York, December, 1916. Complete data will appear in the Journal of Comparative Neurology.

1. Kocher, R. A.: The Effect of Activity on the Histologic Structure of Nerve Cells, THE JOURNAL A. M. A., July 22, 1916, p. 278; Jour. Comp. Neurol., 1916, **26**, 341.

2. Dolley, D. H.: Jour. Med. Research, 1909, **20**, 275; 1909, **21**, 95; 1910, **22**, 331; 1911, **24**, 309; 1911, **25**, 285; Am. Jour. Physiol., 1909, **25**, 151; Jour. Comp. Neurol., 1914, **24**, 445; Arch. f. Zellforsch., 1913, **9**, 485; Anat. Rec., 1916, **10**, No. 3.

3. Hodge, C. F.: Jour. Morph., 1892, **7**, 1.

4. Conklin, E. G.: Jour. Morph., 1912, **23**, 159.

found me in respect to functional size changes, for such size variations have been smoothed out by averaging and remain to be accounted for.

It may be said that most of the discrepant results in the literature depend on this method of collective averaging, though on the other hand it did give certain correct results to the pioneers because of the tendency to size uniformity.

With the false assurance from these results, Kocher was animated to deny all other morphologic evidences of function. He admits, indeed, the existence of all the stages of function previously described by me. The importance of this as the foundation of all succeeding work he strangely does not appreciate, though such an objective confirmation from a professed critic will doubtless carry unhoped for weight. He does not explain them; to him they are tacitly nonsignificant; but he sees them. Instead, because he finds them in the control as well as in the exercised animals, he jumps to the idea that nothing has happened, and hence to a final conclusion of lack of qualitative differences from function. Here it is only that our ideas of the significance of an identical conclusion differ, for it is simply a fundamental conclusion that qualitative differences are to be ruled out. Instead of being destructive to me, it is the first induction I should wish to be confirmed, as it throws comparative function solely on the quantitative principle. The comparison must be made in terms of working cells to resting cells.

He sought for quantitative differences, it is true, by means of differential counts, but failed to find them. The explanation regrettably is that his data are of doubtful accuracy: first, since certain stages as diagnosed do not accord with his text statements and are unlikely of the stated occurrence on the basis of relative differentiation; second, the one stage most liable to confusion by one inexperienced is given scant attention. Since he denies progressive changes in the morphology of the cells, it is evident that he was indifferent to the finer points necessary for a differential diagnosis.

An anatomic basis for function stands.

CONCLUSIONS

Collective averages of cells, irrespective of their functional state, and resulting size variations, which have been the usual basis of comparison between individuals, afford inconstant results and should be discarded. It is a scientific solecism that function, the one faculty which results from the differentiated state, is the one factor which has been neglected in the measurement of differentiated cells. To deny functional size changes in nerve cells on this basis because of small and inconstant variations between one animal and another, as Kocher has done, is a fallacy, and such results indicate only the tendency to a uniformity of species size for corresponding nerve cell bodies.

To investigate the size changes of function, it is necessary to identify and measure functioning stages and the resting type from which they spring. This gives present function. The resting cell alone gives species size, its mean and its variations, and species relativity of plasma to nucleus, uncomplicated by present function.

Making a Choice.—The choice of a profession or trade is not a question to be decided by egotism, ambition or heredity, but by the individual's aptitude. In estimation of this the physician should have the deciding voice.—C. Juarros.

THE RÔLE OF THE SEMINAL VESICLES

IN PERSISTENT NONGONORRHEAL INFECTIONS OF THE POSTERIOR URETHRA AND BLADDER *

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It is well known that the seminal vesicles may become involved during the course of a gonorrheal urethritis, and, if the process remains active in the vesicles, may prolong urethral infection in a most stubborn manner. The constant or intermittent feeding of new infection onto the prostatic urethra keeps active the inflammatory processes of the urethral mucosa, just as inflammatory processes in the vesical mucosa are activated by renal infections.

It is probably not so universally recognized that the seminal vesicles, when the seat of a nongonorrheal or pyogenic infection, may result in prolonged suppuration of the posterior urethra and trigon. These infections may be even more stubborn than those of gonorrheal nature. To me it has been a new realization to find how many of these long-standing bacillary and coccal infections involving the posterior urethra and at times the bladder have been secondary to unsuspected vesiculitis.

Every urologist is familiar with the type of case to which I refer. In some cases the infection assumes the form of a bacteriuria with occasional exacerbations in which a visible amount of pus can be detected and with periods of more or less urinary irritability. Sometimes the patient is seen with a frank cystitis and with a history of repeated previous attacks. Under treatment applied to the local condition, and even often without definite treatment, the symptoms subside and the urinary condition may improve until the most careful examination is necessary to demonstrate the presence of bacteria in the urine. After a varying length of time the process repeats itself. Most often the urine at all times supplies definite evidence of infection and may be continuously cloudy. During the intervals in which the infection is at a low ebb or quiescent, examination of the urinary tract may disclose very little abnormal, and frequently nothing which could explain the persistence of an infection. When exacerbations occur, definite lesions are found; but with the disappearance of the lesions, the infection does not disappear from the urine.

DIAGNOSIS

The fixing of the responsibility on the seminal vesicles as the source of the continued or recurrent infection is not always easy. In cases in which epididymitis occurs, and especially where there is recurrent epididymitis, the diagnosis of an active infection in the vesicles becomes reasonably certain. In many cases the presence of a vesiculitis may be readily determined by palpation; but it is surprising in what a large percentage active foci are present in one or other vesicle and still careful palpation may reveal very few changes. The diagnosis of vesiculitis in many cases depends entirely on changes which can be detected by palpation, and consequently is very inaccurate. When infection is already present in the posterior urethra, the finding of infection in the expressed seminal vesicle secretion is utterly valueless because it is impossible in such

* From the James Buchanan Brady Urological Institute, Johns Hopkins Hospital.
* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

cases to obtain the seminal vesicle secretion uncontaminated. Neither are we always justified in considering that active infection may be present in the seminal vesicles simply because of changes which are detected by palpation. An old inflammatory process may have been present long before, and the induration the result of this process, which has entirely subsided.

In some cases the determination of the presence of infection in the vesicles must be arrived at by a process of elimination. The occurrence of a persistent bacteriuria requires some focus continually feeding infection into some point of the urinary tract where there is no obstruction to urination and no residual urine is present. It is well known from repeated experiments that if organisms are injected into a normal bladder, in a comparatively short time they will entirely disappear from the urine. We know again that if the kidney is infected and that secondarily to this there is present a simple cystitis, the removal of the renal infection will be shortly followed by disappearance of the vesicle infection.

Six cases of the type described above have been under observation for periods varying from a few months to many years. The kidney as a source of infection was eliminated in each case. The patients had been treated at varying times by prostatic massage, instillations, irrigations, stripping of the seminal vesicles, etc., but in none of the cases was it possible to eradicate entirely the infection, and they presented themselves at different periods with exacerbations. In two of the cases the infection took the form of a persistent bacteriuria, one case being due to a colon bacillus and the other to a staphylococcus. Of the remaining four cases, one was a staphylococcus infection and the other three were due to colon bacilli. In the latter four cases pus and organisms could always be found in the urine, the amounts varying at different periods.

TREATMENT

In the belief that the seminal vesicles were probably responsible for these stubborn and resistant infections, it was determined to do a vesiculotomy in each case. In two cases a recurrent epididymitis pointed strongly toward the seminal vesicles as the most probable cause. In three cases there were definite changes in the seminal vesicles which could be detected on palpation. In three of the cases no changes could be detected, and they were apparently normal on palpation. The results of the vesiculotomy in each case were immediate and most gratifying. The histories of a few of these cases will illustrate:

REPORT OF CASES

CASE 1.—G., aged 25, seen about May, 1913, complained of frequency and some burning on urination which had been present for over a year. Examination of the urine showed pus and staphylococci. The seminal vesicles presented no changes on palpation, but there was present a mild prostatitis. Catheterization of the ureters showed the urine from each kidney to be negative for infection, while the posterior urethra and trigon presented a somewhat red and granular appearance. The patient was treated with irrigations, instillations and prostatic massage for several months with very little improvement in the urinary condition, although the symptoms practically entirely disappeared. A few months later he developed an epididymitis on the right side, and some time later an epididymitis on the left side. Later on the urinary symptoms returned again and it was finally decided to do a vesiculotomy. The perineal exposure recommended by Young was employed, and the vesicles thoroughly brought into view and opened by several incisions, the ampulla of the vas being drained as well as the vesicles. The patient remained in the hospital two weeks, and at the end of this time, although no local treatment was employed, the urine was entirely free of infection. The patient has been under observation almost a period of two years since the operation, and there has been no recurrence of his trouble.

CASE 2.—M., aged 45, seen in 1907 with a history of having had urinary irritability with attacks of frequency and cloudy urine for over six years, on examination was found to have a staphylococcus infection with considerable pus. There was no renal infection, and the bladder was practically normal. The patient was seen at intervals for eight years, and during that time received a great variety of treatments, including autogenous vaccines. The seminal vesicles in this case were considerably thickened with some perivesicular induration. In December, 1915, the patient consented to a vesiculotomy. The seminal vesicles were found to be quite thick walled and fibrous, the right seminal vesicle being particularly pathologic. Because of the marked thickening in the vesicles, the posterior wall of each vesicle was excised so as to give more perfect drainage, and the ampulla of the vas was thoroughly opened on each side. A cigaret drain was introduced on each side, being left in position for four days. The convalescence was uninterrupted, and examination of the urine two weeks later, when the patient left the hospital, showed the complete absence of infection. He has been seen at intervals during the past six months, and the urine has remained entirely sterile. It is interesting to note that for a few months following the operation there was some diminution in sexual power but recently this has returned to normal.

SUMMARY

In view of the results obtained in this small series of cases, it seems probable that many at least of these recurrent and persistent infections of the posterior urethra are secondary to infection of the seminal vesicles. In some cases in which the vesicles show very few changes on palpation, it may be possible by injection of the vas with argyrol or protargol to eliminate the infection of the vesicles. Where, however, there are any marked inflammatory changes in the walls of the vesicles, it does not seem reasonable to suppose that anything short of vesiculotomy or even partial vesiculotomy will accomplish the desired results. Where the vesicles show marked inflammatory changes, it is impossible by a single incision to secure thorough drainage, and in these cases it has been found advisable to remove the posterior wall of the seminal vesicles so as to drain the different pockets thoroughly. Furthermore, the ampulla of the vas should be opened in each case; otherwise a contributing focus may be overlooked. In order to secure the proper drainage, a thorough exposure of the vesicles is important. The urethra should not be opened, and after stripping back the levators and fascia from the prostate, the seminal vesicles present themselves as a rule quite readily in the operative field. They are furthermore brought into more accessibility by means of the Young tractor, which is similar to the prostatic tractor but is introduced through the meatus. This serves to push the seminal vesicles well into the field so that they can be readily attacked.

CONCLUSIONS

The seminal vesicles are much more frequently the cause of persistent bacillary and coccal infections of the urine than is generally supposed. These infections do not respond readily to local measures, and stripping of the seminal vesicles has not proved of much value in many of our cases. After local measures have failed to eradicate the infection, vesiculotomy is indi-

cated. The vesicles in each instance should be thoroughly opened, the ampulla and the vas as well as the body of the seminal vesicles being thoroughly drained. In none of our cases of simple infection has a troublesome fistula resulted.

REPORT OF FIFTY-TWO CASES OF SEMINAL VESICULITIS *

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From Jan. 1, 1907, to Jan. 1, 1916, my clinical records show that we have handled, in our office, sixty-seven private cases in which a diagnosis of seminal vesiculitis has been made, most of which were complicated by prostatitis. We have subsequent reports on fifty-two. Of these sixty-seven cases, eight operations were performed for diseases of the vesicles, a rather large percentage as compared with other records. The following clinical symptoms, some of which were present in all cases, and all of which symptoms were present in some of the cases, are reviewed:

Temperature and symptoms of sepsis with blood changes, twelve times.
Pain in the end of penis, thirty-eight cases.
Heavy feeling in the perineum, thirty-six cases.
Burning after urination, nineteen cases.
Pain in the back, fourteen cases.
Pain and heavy, sore feeling in the groin, thirty-two cases.
Pain on ejaculation at some time in the history of the case, twenty-four cases.
Pain on defecation, twenty cases.
Constipation, ten cases.
Intermittent discharge, thirty-nine cases.
Frequent urination at night, thirty-four cases.
Frequent urination in the day time, twelve cases.
Sexual aberration of one kind or another, twenty-six cases.
Complaint of passage of semen or some thick fluid at close of bowel movement, ten cases. (This fact I was not able to demonstrate in any case.)
Complaint of passage of semen following urination, eight cases.
Epididymitis, fifteen cases.

In five of the foregoing cases, the question of etiology was doubtful. In all of the others, it was definitely laid at the door of gonorrhea. There is no record in my histories of any cases having exhibited the symptoms spoken of by some of the writers as a colic simulating the passage of a kidney stone. No cases of metastatic infections are included.

These symptoms fall into three classes: general, genital and urinary.

General Symptoms:

Temperature and blood changes, twelve times.
Pain in different regions, 154 times.
Malaise and headache practically in every case.
Constipation, ten times.
Heavy feeling in the perineum, thirty-six times.

Genital Symptoms:

Increased sexual desire, twelve times.
Decreased sexual desire, ten times.
Excessive and uncontrolled sexual passion, four times.
Impotence, three times, sterility, five times.
Spermatorrhea (*a*) following bowel movement, sixteen times; (*b*) following urination, eight times.
Pus discharge, thirty-nine times.

Urinary Symptoms:

Frequent urination by day, twelve times; by night, thirty-four times.
Painful urination and pain in the end of the penis, fifty-seven times.

After washing out the urethra by a fluid passed into the bladder under a hydrostatic pressure and passed out again, thus washing out the urethra, the vesicles were massaged as distinctly as possible from the prostate. A Valentine endoscope was introduced into the bulb of the urethra before massage, and the fluid flowing out was collected and examined. The following are the results:

Unstained Microscopic Examination:

Sago bodies, thirty-eight times.
Sugar bodies, eight times.
Skins, ten times.

Stained Specimens Examined by the Microscope:

Staphylococcus, thirty-six times.
Diplococcus, gram negative, eighteen times.
Diplococcus, gram positive, twelve times.
Colon bacillus, six times.
Pus in every case.
Blood in ten cases.
Lecithin globules in every case.

In forty-two cases the records show inability to determine whether this pus came from the prostate or the seminal vesicles. In most cases I was sure that it came from both, and in only one case was I positive that the pus came alone from the seminal vesicles, because the prostate had been removed. On endoscopic examination the verumontanum was shown to be swollen and red and bleeding easily in practically all cases. In forty-nine cases the colliculus was inflamed. The infection of the verumontanum and the posterior urethra was due to the discharge of pus from the ejaculatory duct or from the ampule of the vas deferens or from the seminal vesicles.

The study of the urethra by sound and the dilation frequently showed narrowing in the bulbous urethra. In eighteen cases the urethra was exceedingly sensitive to the passage of the sound, and bled at the slightest touch. In twenty-five cases, on examination of the vesicles by the finger through the rectum, we have noted the following:

Vesicular enlargement, sensitive and thickened on the right side, twenty-nine times.
Vesicular enlargement on the left side, twenty-three times.

This is contradictory to the reports of many of the writers that the infection of the vesicle is much more common on the left side than on the right.

The prostate showed signs of enlargement in forty-six cases, indurated nodules in thirty cases, and it was soft and boggy in the remainder.

Vasotomy was performed eleven times, and the Hagner operation for epididymitis eight times. Eight patients were operated on for vesicular infections. The results of these eight cases form the most interesting portion of this paper:

REPORTS OF CASES

CASE 1.—Mr. A., from South Dakota, family presented negative and personal history, except that about one and one half years ago he had contracted gonorrhea. After three or four months the continuous discharge ceased. The

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

patient had, however, intermittent discharge. He was referred to me because he was suffering from sexual aberrations. He believed that his sexual manhood was entirely destroyed forever. He was confident that any one meeting him on the street who looked in his eyes could determine that he was impotent. He had illusions of various kinds. Physically, he complained of the intermittent recurrence of the discharge, which was not very profuse but which occasionally started up and continued for three or four days. He had to rise once or twice at night. At times he had burning on urination, and the slightest effort in the way of work, drink or overeating would produce pains in the perineum, pain and soreness in the urethra, and a discharge. This was one of our early cases, and the record shows that we made a diagnosis of prostatitis and thought that it would be wise in such a case to open the perineum and drain the prostate or perhaps remove part of it. On arriving at the prostate, we were unable to determine anything serious about it, and in dissecting about the prostate and endeavoring to bring it better into view, discovered that the left vesicle was large and indurated. We opened this and drained out considerable pus; after the usual treatment the patient made an operative recovery. For a time he was perfectly well. In the course of a year and a half he returned again. This discharge was still in existence; his sexual symptoms were no better; his general state of health was exceedingly bad, and his mental condition worse. We then put him on the ordinary medical treatment, namely, prostatic massages, dilation of the urethra and the use of silver. This he continued for about six months, after which he left, much improved. About a year ago we heard from him again to the effect that he was better, was married and settled down, and his sexual hallucinations had disappeared. This, no doubt, was a useless operation. There are no facts connected with the results of the case that would tend to make me believe that this operation had any beneficial effect whatever. Local treatment and possible vasostomy should have been given a more thorough trial.

CASE 2.—Mr. A., referred from Omaha, by Dr. Ewing Brown, had negative personal and family history. There was history of pain in the perineum and on defecation, occasional rise of temperature, and frequent urination. The left vesicle was sore, painful, large and distended. We opened the vesicle in the Swedish Mission Hospital, Oct. 22, 1910. A large amount of pus came from the vesicles. Tube drainage was inserted. After a stormy convalescence, accompanied by epididymitis, the patient was finally able to leave the hospital. The urinary fistula through the perineum remained for two months, after which it closed. He made a symptomatic recovery but claimed to be impotent and his discharge continued. Whether or not he was sterile, I have not had the opportunity to determine.

CASE 3.—Mr. B., referred from Omaha, had gonorrhea about three years before, and complained of intermittent discharge, especially the morning drop. He had frequent urination, and occasional retention. On physical examination his prostate seemed enlarged on the right side. The seminal vesicle was indurated, enlarged and sore. The seminal vesicle on this side was drained as before. It was a chronic condition, and a question whether any pus was found or not; but the vesicle was slit through its entire length. The patient made a rapid operative recovery with no trouble whatever, and three years ago he was perfectly well.

CASE 4.—R., referred by Dr. Owen of Omaha, had a definite seminal vesiculitis of a chronic history. We drained the right vesicle. He had a stormy convalescence accompanied by epididymitis, and he was a constant attendant at my office for about two years after the operation. The subsequent symptoms after the operation were intermittent discharge, pain in the right groin, the side on which the vesicle was drained, pain in the back, heavy feeling of the perineum, headache and constipation. By continued prostatic massage, irrigations, the use of dilation of the urethra and occasional cauterizations, we were able to remove the trouble entirely. This case I regard as one in which the operation did no harm and probably did no good.

CASE 5.—Mr. C., from South Dakota, came to us after he had treated himself for an acute urethritis for some time. After careful physical and chemical examination, we determined that he had a large pus sac in the way of a right vesicle. He decided to have the vesicle drained. This we did. He recovered without any event, but in the course of two or three weeks after the operation, the discharge returned, his prostatic infection continued, and the last I knew of him he went to Dr. Belfield, who undoubtedly did a vasostomy on him and cured him.

CASE 6.—Mr. P., of Belleville, Kan., referred by Dr. Decker, Sept. 30, 1912, was a sexual neurasthenic. On careful examination we thought we were able to determine a large and tender vesicle. He had frequent urination, and the bladder was more or less congested over the trigon, as seen by the cystoscope. He had intermittent discharge from gonorrhea about five years ago. In this case we determined to attempt a removal of the vesicle, which we did. He recovered from the operation very nicely, his discharge stopped, his sexual neurasthenia remained, and he thought he was impotent, but his semen showed live spermatozoa. He consulted Dr. Braasch, Rochester, Minn., and on his return he told me that Dr. Braasch thought he was perfectly well.

CASE 7.—Mr. R., referred from Omaha, Jewish, had chronic gonorrhea for five years, with recurrent attacks at intervals of about every two years. He came to us for recurrent epididymitis. Because of pus in the prostate and seminal fluid, indurated and plainly palpable vesicle on the left side, we advised a vesicle removal, which was done, March 15, 1911, at Swedish Mission Hospital. The patient made an ideal recovery, and after about four months had no more discharge. Epididymitis did not return, and the patient had no sexual difficulties.

CASE 8.—Mr. G., Jewish, 1912, had recurrent acute cystitis, with frequent urination. The bladder was normal except on the right side over the trigon, where it was edematous, congested and red. There was pus in the vesicular and prostatic contents, and an indurated and sore vesicle on the right side. On this evidence a diagnosis of seminal vesiculitis was made, and a part of the right vesical was removed. The patient had had only palliative treatment before this. He had never had a vasostomy. This man is a resident of Omaha and was an employee in the Jewish Hospital in this city. I see him every few days, and to date he seems to be perfectly recovered from his symptoms.

COMMENT

A study of these cases would place them under three clinical heads, namely, acute, subacute and chronic infections of the seminal vesicles.

The symptoms of the acute form are those of acute general sepsis characterized by rise of temperature, pain, leukocytosis, malaise, constipation, headache and the ordinary train of symptoms following such infection. Locally, we may have exceeding tenderness on pressure over the vesicle, pain on defecation, pain on ejaculation, increased and often uncontrollable sexual desire, and pain on urination accompanied with tenesmus. I regard the treatment of this class of cases as best executed by the vasostomy of Belfield. If this does not succeed, removal of the vesicle may be done.

The subacute form of seminal vesiculitis is characterized by the recurrent appearance of the symptoms of acute vesiculitis. The manifestation of recurrent incurable discharge appears. Chronic pains in the back, pains in the groin, Volecker has shown, are frequently due to a localized more or less circumscribed pus infection in the vesicle. Vasostomy cannot reach or be expected to cure this condition.

The chronic form of seminal vesiculitis is chiefly characterized by the appearance of sexual neurasthenias and aberration. Any or all of the preceding symptoms may be present, but chiefly in this case

appear hallucinations of impotence and sexual weakness, which have demoralizing effects on the individual. Pathologically, Volecker divides this class of cases into two divisions: first, those in which the mucosa alone is entirely destroyed, and second, those in which not only the mucosa is destroyed but also the inflammation has extended through the fibrous wall of the vesicle and has produced an extensive perivesiculitis. Frequently the second class is a result of the first. In such cases it is impossible to conceive that the treatment by vasostomy can avail in the reconstruction of a destroyed organ. It is this class of cases in which vesiculectomy is indicated. From my experience, together with the study of the work of Tuller, Belfield, Squire, Schmidt, Volecker and others, I am convinced that if vasostomy fails, the removal of the seminal vesicle has a far wider and more beneficial application than the drainage of the vesicle alone. We can conceive only from a pathologic standpoint that drainage of the vesicle would be effective in those cases in which there was a pronounced empyema of the seminal vesicle. Drainage of an old hard vesicle with its mucosa infiltrated with round cells would be of very little benefit.

The technic which we have employed has been the ordinary technic as used by Young and Schmidt, and by a careful pulling of the prostate, we have been always able to arrive at the seminal vesicle just as it leaves the prostate gland. By a careful hemostasis and sharp dissection we have been able to isolate the vesicle at this point and to place a ligature between the vas and the vesicle by the use of a ligature carrier. By tying on either side and cutting between the sutures, we have been able in our cases to dissect out the vesicle, beginning from below and proceeding upward, contrary to the ordinarily recommended technic. If, however, a clamp is placed on the vesicle and gently retracted, and the tough fibrous capsule around the vesicle is cut on its lower border, the vesicle can be easily peeled out.

CONCLUSIONS

1. Seminal vesiculotomy is rarely indicated, and should not be done except in those cases in which there is an empyemic vesicle with signs of general sepsis and no tissue destruction.

2. On anatomic and pathologic grounds the operation of drainage of the vesicle cannot remove the disease in chronic cases, and the pathologic condition will return when the wound has healed.

3. In all chronic infected vesicles with a series of chronic symptoms, if after proper medical and mechanical treatment and vasostomy it becomes necessary to perform such a major operation as that of draining the vesicle, the removal of all the superprostatic vesicle adds such a small degree of operative risk that it is justified in practically every case in which such extreme methods are necessary.

4. Seminal vesiculitis as a simple clinical entity is exceedingly rare, and the diagnosis is difficult and rarely made, because sufficient attention has not been directed to this infection.

5. Treatment of the seminal vesicle alone has imperfect and incomplete results. The other urethra adnexa which are adjacent must be treated at the same time.

6. The prostate, the trigon, the vera and the utricle are usually either primarily or secondarily infected in cases of vesiculitis.

SEMINAL VESICLE INFECTIONS AS THE CAUSE OF PERSISTENT URETHRAL DISCHARGE

REPORT OF CASES *

ROBERT H. HERBST, M.D.
CHICAGO

This report is limited to the discussion of cases of acute urethritis in which the persistence of the discharge was thought due to infection of the seminal vesicles. In over 75 per cent. of cases in which the gonococcus invades the male urethra, it travels back of the cut-off muscle and into the posterior urethra, and in most, if not all of these, the ejaculatory ducts and subsequently the seminal vesicles become involved. When this condition prevails, the disease must be considered a genital tract as well as a urethral infection.

If the assumption is correct that most posterior urethral infections are complicated by involvement of the seminal vesicles, do we do our patients justice when we limit our treatment to urethral medication? It is only of late that the treatment of the seminal vesicles has been considered worthy of attention, and as a matter of fact the handling of this phase of the infection is the most serious problem that confronts us.

Let us consider what the possibilities are in a given case in which the treatment of the vesicles is ignored until a subacute or chronic condition ensues.

1. The vesicles may heal out spontaneously.

2. The acute process may gradually subside, with a resulting chronic vesiculitis.

3. Acute recurrent infections of the epididymis are possible at any time as long as infection in the vesicles persists.

4. Systemic manifestations and joint involvements are always possibilities during the continuance of such infections.

5. The acute process may not subside and may be the cause of the persistence of the urethral discharge.

Inasmuch as spontaneous healing of infected vesicles is a rarity, and local treatment, such as stripping, is curative in only a small percentage of cases, the question arises. When is surgical intervention indicated? If we consider the number of complications and sequelae that may develop at any time during a vesicle infection, it would seem logical to direct treatment to these organs when once we are convinced that they are involved.

Contrary to this idea, in the past, vesicle surgery has been limited principally to chronic cases not accompanied by a profuse urethral discharge. In this report I wish to refer to a class of cases in which, regardless of urethral medication, the discharge has persisted over a long period of time. It is my belief that in many of these the vesicle infection is the direct cause of the persistence of the urethral discharge.

My attention was first drawn to this theory by a patient who came under my observation complaining of a profuse discharge from the urethra of six months' duration, complicated by frequent and painful blood-stained emissions, which had not occurred prior to the urethral infection. These emissions led me to make

* Read before the Section on Genito-Urinary Diseases at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

a careful examination of the vesicles, which proved them to be greatly enlarged and tender. In order to relieve this condition, I made a bilateral vasotomy and injected both vesicles with collargol. To my surprise, the profuse urethral discharge practically disappeared within forty-eight hours. Since this time I have made it a point to scrutinize carefully the vesicles in all cases in which the discharge from the urethra does not respond to the usual treatment. Since resorting to this practice, I am convinced that the seminal vesicles have not received the recognition they deserve in the acute stage of gonorrhea of the male urethra. It is obvious that the diagnosis is in many instances difficult; however, when the urethra discharges persistently, it is our duty to make a careful rectal examination of the vesicles. This examination will often reveal large, soft, tender vesicles, differing from the chronic cases, in which the vesicles are usually hard.

Brief cessation of the urethral discharge, with repeated recurrences, should also attract our attention to the vesicles.

Few of these cases exhibit symptoms pointing to these organs; however, we find some patients who complain of a sensation of fulness in the rectum, as well as those who are troubled with frequent and painful emissions, which are sometimes blood-stained.

Given a case of protracted urethral discharge, in which, on palpation, the vesicles are found enlarged and tender, would it not seem far better immediately to attempt to eradicate the infection from the vesicle rather than to wait for the condition to become chronic, with the accompanying danger of the many complications and sequelae which may develop in the interim?

This report does not include any cases of chronic seminal vesiculitis, but is limited to those in which vasotomy was performed for the relief of profuse and persistent urethral discharge, which was believed attributable to infected vesicles.

REPORT OF CASES

CASE 1.—M. P., aged 23, complained of a profuse purulent discharge from the urethra, of six months' duration, and of frequent painful seminal emissions, which developed during the fourth week of his infection.

Examination revealed a purulent urethral discharge which contained numerous gonococci. Rectal examination revealed both vesicles enlarged and soft. The prostate was slightly enlarged. The patient had been given various mild silver salt injections, since the start of his trouble, without any diminution of the urethral discharge. Sedatives failed to control the frequent and painful emissions. For the relief of the latter condition, a bilateral vasotomy was performed and both vesicles injected with 8 c.c. of a 5 per cent. collargol solution. To my surprise, the urethral discharge was hardly noticeable after forty-eight hours, and disappeared entirely within a week.

CASE 2.—J. F., aged 24, single, contracted gonorrhea two years before. He states that discharge from the urethra returns promptly (within forty-eight hours) after every sexual exposure. The present discharge has continued for the last two months. Palpation of vesicles showed them to be enlarged and rather harder than normal. Pus from the urethra contained many gonococci.

Dec. 16, 1915, bilateral vasotomy was performed, followed by injection of both vesicles with 6 c.c. of a 3 per cent. collargol solution. The discharge disappeared within ten days; it has not recurred, although the patient has had several sexual exposures since the operation.

CASE 3.—F. H. contracted gonorrhea three years ago. He has had many acute exacerbations since. The present profuse discharge was of nine weeks' duration. The discharge developed twenty-four hours after exposure and was evidently an auto-infection, due to the passage of contents of infected vesicles into the urethra.

Examination showed both vesicles enlarged and tender. Microscopic examination of pus from the urethra showed gonococci.

Bilateral vasotomy and injection of vesicles with collargol was followed by diminution of the discharge and gradual disappearance in eleven days.

During the entire three years the treatment consisted of urethral injections, but the patient was never free from discharge and pus in the urine.

CASE 4.—S. C., aged 26, with no past venereal disease, had a urethral discharge which began eight months ago, appearing four days after exposure. The patient developed left epididymitis in the fourth month of infection.

Examination revealed a profuse purulent discharge, which had been uninterrupted since infection started eight months before. Injection of mild silver salts had no effect on the discharge.

The vesicles were both very large and tender, the tenderness being more marked on the left side. Microscopic examination showed many gonococci.

Feb. 4, 1916, a bilateral vasotomy was performed with injection of 12 c.c. of 3 per cent. collargol into each vesicle. The discharge was completely absent on the fifth day after operation. The urine remained cloudy, but cleared up promptly after a few applications of silver nitrate to granulations in the posterior urethra.

CASE 5.—W. H., aged 30, complained of a painful swelling in the right side of the scrotum of four days' duration. He stated that he had had a profuse discharge from the urethra for three months. He had been treated with urethral injections since the onset.

Examination revealed the right epididymis and cord greatly swollen and tender, and both vesicles greatly enlarged.

Jan. 15, 1916, a right epididymotomy was performed, followed by bilateral vasotomy and injection of both vesicles with 6 c.c. of 5 per cent. collargol. Pain and swelling in the epididymis subsided promptly. The discharge from the urethra disappeared in eight days.

COMMENT

The five cases reported in detail are taken from a selected series of twenty-one. All cases in the series had the following points in common:

They all had a profuse purulent discharge from the urethra. This discharge had been of long duration—from two to eight months.

They all gave clinical evidence of involvement of the seminal vesicles.

They all had the usual treatment directed to the urethra, without apparent benefit.

In six cases the discharge disappeared within a week; in three cases within two weeks; in four cases within three weeks.

In five cases the discharge continued after operation, and I am satisfied that the urethral glands or the prostatic follicles were more responsible for the discharge than the seminal vesicles.

In three cases after the operation the discharge changed from purulent to serous in character. In two of these, urethroscopic examination revealed granulations in the posterior urethra, and the discharge cleared up promptly after application of 5 per cent. silver nitrate solution. The third patient improved after instillations of silver nitrate solution, but passed from my hands still showing a slight discharge.

Considering the reports of Belfield, Fuller, Squier, Young, Pedersen and many others, who report excellent results from the various operative procedures

directed toward chronic infected vesicles, the question again arises: Why not attack these cases when we are convinced that the vesicles are involved, and are responsible for the persistence of the trouble?

32 North State Street.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. GERAGHTY, STOKES AND HERBST

DR. E. O. SMITH, Cincinnati: Dr. Geraghty's discussion of the seminal vesicles as a seat of infection is well taken, and all of us are familiar with the frequency with which this condition occurs. He did not mention one of the remote symptoms, which has been overlooked many times, and that is arthritis. We have here a focus of infection that sometimes escapes notice, as is illustrated by a patient sent to me sometime ago for a persistent arthritis, most evident in the lower extremities. It had been going on more or less for two or three years. He had been to health resorts and had had many sorts of treatment. A surgeon put arches in his shoes. This did not relieve him. He was sent to a dentist and had a large amount of expensive bridgework removed, but this did not relieve his arthritis. Some months later he was sent to me for examination of the seminal vesicles and prostate. We found involvement of these structures, and put him on suitable treatment—massage, irrigation, vaccines—and the arthritis cleared up very promptly.

DR. O. S. LOWSLEY, New York: The seminal vesicles begin to develop at the fourth intra-uterine month as evaginations from the vasa deferentia. Pauline has shown that the anatomic arrangement consists of one main tubule extending the entire length of the vesicle, with a varying number of small branches laterally. This normal anatomic arrangement, of course, is distorted in diseased conditions.

DR. V. D. LESPINASSE, Chicago: The problem of infection in the seminal vesicle seems to be, first, diagnosis. If we treat the vesicle directly we must be sure that the disease is in the vesicle itself and nowhere else, and the greatest trouble is to diagnose these cases, not to decide what type of treatment is best. In the acute cases vasostomy with irrigation, which washes out the ejaculatory duct and the ampulla of the vas and frees it from the thickened secretions, acts the same as the passage of a ureteral catheter or the simple incision of an abscess, and consequently gives excellent results.

In the chronic cases this procedure does not always produce the results that we should like to have it produce. In such cases bisection or removal should be done. Our results in this work will be poor unless we select our cases carefully and make a localizing diagnosis before we institute any surgical procedure.

DR. JOHN R. BROWN, Tacoma, Wash.: No case ought to be allowed to become chronic. In our own work we have experimented to some extent with rather excessive heat applied to the seminal vesicles. The gonococcus is not resistant to heat. One hundred and five degrees for five minutes will kill a culture in vitro. Some authorities say there are certain strains that will survive 113 degrees for five minutes, but that seems to be the limit. If we then can apply heat directly to the infected spot it seems that it is a very good application. I have devised a rubber bag, which is introduced into the rectum through a tubular speculum. It has rather thin walls, and an inflow and an outflow tube; a thermometer controls the heat, and the heat we apply is 125 to 135 F., which the rectum will bear without very much inflammation for an hour. We can apply the same heat in the urethra by means of a hollow sound. The outside skin of the penis will be raised to 106 F. in five minutes. The urethra will not stand much more than 120 F. The rectum will stand a temperature of 135 F. The results in these cases have been much more than we had hoped for in the beginning, two or three treatments curing acute cases of seminal vesiculitis. In chronic cases it is less spectacular, but even in cases of five years' standing, and in one case of eighteen years' standing, we secured what seems to be a symptomatic cure.

DR. LOUIS E. SCHMIDT, Chicago: I do not believe we should rely entirely on our finger for diagnosis. If we do, we will overlook an enormous percentage of cases. I am under the impression that in a lot of these people who have pain in the suprapubic region, whether or not accompanied by any sexual, urinary, rectal or abdominal symptoms, you can detect a sensitive vesicle with an instrument. If no other instrument is at hand, the handle of a sound should be used, and you will be surprised to discover so many sensitive vesicles if you do this in a systematic manner. Those people in whom you can elicit a terrific pain by pressure on the upper portions of the seminal vesicle I am inclined to believe demand treatment, not necessarily operative, but they should receive the regular routine, plus massage with an instrument, and later vasostomy if necessary. If this routine is gone through several times and if no result is obtained, operative interference can be considered in many of these cases.

As to the presence of blood in the semen that is obtained by massage, fully 75 per cent., if not more—possibly 95 per cent.—of all cases of seminal vesiculitis show blood in the presence of pus. Oftentimes you massage a prostate and get pus and you are in doubt as to whether the pus comes from the vesicle, but if there is blood present it is almost a certainty that the pus comes from the vesicle. You rarely ever can get red blood cells even in microscopic quantities if the inflammation is only located in the prostate. As to operative interference in these cases that have neurasthenic symptoms, the more prominent the symptoms the better it is to omit operative intereference, because these symptoms, in connection with others, will not disappear. It is true that operative interference might improve some of the conditions for which you operate, such as recurrent discharges, but, as a rule, their neurasthenic symptoms will increase. There are a lot of little details as far as the operative interference itself is concerned. I believe you can get along very well without the aid of Young's instrument in pulling down the prostate and seminal vesicles. Furthermore, it is not necessary to use the method that Squier recommended. You can make the exposure of the seminal vesicles and remove them without any such help. The whole secret is that there should be an exposure which will permit of careful interference.

DR. A. C. STOKES, Omaha: I wanted to bring out the fact that in a pus sac like the seminal vesicle, removal of it is better surgery and better pathology than the drainage of it. We do not drain a gallbladder or an appendix or fallopian tube; we remove them. There is one point I thought some one would bring out; that is, the relation of the seminal vesicles to the peritoneum. A German surgeon some years ago and later Dr. Young have shown that we can reach the seminal vesicles from above. While I have not done that on the living subject, I have done it several times on the cadaver, and believe one can remove them with less trauma to important structures from above than from below.

DR. LOUIS E. SCHMIDT, Chicago: I would like to say a word with regard to impotency as a result of these operations. It shows that the operations of vesiculotomy and vesiculectomy should not be carried out promiscuously. There is no question, from all the reports, that this is the consequence in a certain percentage of cases. I have one to report out of the last ten cases in which I have operated. I am not in a position to state whether it is only temporary or permanent. The impotency has persisted practically nine months, and I know of other instances where the impotency has persisted for a much longer period of time. This word of warning is sufficient: Do not operate too quickly if you consider this one unfortunate result which can occur in any case. In this particular instance the individual's symptoms were chiefly pain. He had been operated on by others in every conceivable way, previous to the draining of the seminal vesicles. In a great many cases where there has been considerable pus and where the vesicles have even been infiltrated, with small abscesses in their walls, the results as regards impotency have been perfectly satisfactory. The pathology in these cases where impotency has followed in my series has been far less than in those cases where impotency did not result.

A Complete Library.—Every library should try to be complete on something, if it were only the history of pinheads.—O. W. Holmes, The Poet at the Breakfast Table.

CERTAIN ASPECTS OF NATURAL AND ACQUIRED RESISTANCE TO TUBERCULOSIS

AND THEIR BEARING ON PREVENTIVE MEASURES *

THEOBALD SMITH, M.D.
PRINCETON, N. J.

(Continued from page 674)

The significance of the histologic elements in tuberculous foci may perhaps be elucidated more completely in the future by a comparative study of primary, secondary and later foci. Thus the existence of a chain of tuberculous lymph nodes signifies, at least in certain regions of the body, that one has been infected from the other. If the first or primary focus has had any appreciable effect on the relative immunity of the host, the reaction in the second node should differ somewhat from that of the first. The same may be said of a third focus. A more frequent manifestation of secondary foci occurs in what is known as generalized or miliary tuberculosis. It is obvious that the tissue reaction in miliary disease should be different from that of the primary focus, since the body must have undergone a certain degree of immunization, however slight. While the character of the tissue reaction in secondary foci may remain qualitatively the same, there may be quantitative changes in the direction of an accelerated reaction.

The behavior of different species of animals differs markedly with reference to the progress of tuberculosis toward secondary and tertiary infection. In highly susceptible animals, as the guinea-pig, the prompt invasion of the blood stream and the formation of foci in spleen, lungs, liver and other organs is the rule. It proceeds rapidly after infection. In other species, generalized infection does not occur regularly. The formation of large numbers of miliary and submiliary tubercles, in cattle, for example, is rarely seen, and the entry of tubercle bacilli into the blood is indicated by a few often relatively large foci. This condition is best explained by assuming that the bacilli entering the blood are suppressed before tubercles are actually formed, and that the isolated foci of hematogenic origin are the resultant of local, specially favoring conditions. On the other hand, in swine which are victims of the bovine bacillus, miliary tuberculosis is far more frequent. Bearing on this point, the occasional single giant cell in otherwise normal tissue of tuberculous cattle may be regarded as a tubercle in its simplest as well as most highly immune type.

GENERALIZED TUBERCULOSIS

We may thus state that generalized or miliary tuberculosis may occur in two extreme types of cases: (*a*) in those highly susceptible it occurs regularly, (*b*) in those relatively immune, as in man, it occurs infrequently, and may be the result of some intercurrent disease or accident which caused a dissemination from a primary focus. Between these extremes, intermediate types undoubtedly occur. The problem is to find out the differences in the character of the secondary tubercles of the two classes as defined above. The tubercles of the first group should show a tendency toward enlargement and progression into the environment; those of the second group, a prompt tendency toward those retrogressive changes, such as sclerosis, caseation, calcification, and capsule formation, which indicate host resistance.

TYPES OF TUBERCLE

A series of types of tubercle depending for their make-up on the degree of host immunity may be formulated as follows, beginning with the highest resistance:

1. The giant cell alone.
2. The giant cell plus a small envelope of epithelioid cells, the whole remaining pervious, not undergoing necrotic changes, and becoming sclerotic.
3. A focus larger than that just mentioned and undergoing prompt caseation and calcification.
4. A group of tubercles due to temporarily unhindered multiplication of bacilli and forming a relatively large focus undergoing the usual retrogressive changes.
5. Very rapid and copious multiplication of tubercle bacilli within a given focus, or tubercle leading to necrosis and subsequent dissemination of bacilli.

These, among other types, serve to indicate the variable factors at work, be they humoral or cellular, or the two operating together. The giant cell alone, according to this scheme, stands for the highest type of resistance, as indicated by histologic methods. The suppression or destruction of individual tubercle bacilli without any recognizable reaction of any kind on the part of cellular elements is, of course, possible, but such a process is not likely to be demonstrated by current histologic methods.

The outstanding fact of interest in the relation between the tissues of the host and tubercle bacilli is the survival of a certain number of the latter in the products of degeneration and their discharge outward. How many bacilli are produced, how many destroyed in tuberculous lesions cannot be even guessed at. The data obtained by staining methods indicate that in relatively susceptible hosts, such as the rabbit, toward bovine tubercle bacilli, the foci contain very large numbers of bacilli. In relatively resistant hosts, such as the rabbit, toward human bacilli, the foci contain few bacilli. It is probable that the tissues in general operate toward suppressing multiplication rather than in destroying bacilli which have multiplied, although, as stated above, active destruction is not questioned here.

LATENCY OF BACILLI

Around the fact of the survival of tubercle bacilli — a necessary prerequisite to their continued existence as a species — there have arisen special questions concerning the latency and persistence of tubercle bacilli. Latency may be defined as the presence of tubercle bacilli in supposedly normal tissues of still normal individuals, and persistence as their continued presence in manifestly tuberculous tissue. For example, bacilli have been found in apparently normal lymph nodes of children by a number of observers, as determined by inoculation of such tissues into animals. Such nodes, however, may contain microscopic foci, as pointed out by Joest, L. Rabinovitch and others. Why such foci should have remained microscopic belongs to the unexplained phenomenon of individual resistance, unless we grant that the individuals are practically immune to the particular bacilli encountered. As stated above, the persistence of bacilli in caseous and even calcified and chalky foci has been noted by observers both in the human and the bovine

* Second Mellon Lecture, delivered before the Society for Biological Research, University of Pittsburgh, May 17, 1916.

* This is the second section of Dr. Smith's article. The first part will be found in THE JOURNAL, March 3, 1917, p. 669.

diseases. Weber and others, from an intensive study of the distribution of human bacilli after intravenous injection in calves, concluded that virulence was a very important factor in persistence. When using tauruman, a fairly active vaccine, consisting of a culture of human tubercle bacilli, they found bacilli still present in all tissues examined after the first month. Thereafter the bacilli gradually disappeared, remaining longest in heart and lungs. After six months they were no longer detected. In the subcutaneous tissue, bacilli survived for over eleven months. The bacilli of a weaker vaccine disappeared more quickly. Calmette states that cattle treated or vaccinated with bovine bacilli grown on a glycerin-bile medium resisted a fatal dose and remained well. Such cattle, however, harbored virulent bacilli in lymph nodes, chiefly the bronchial, for as long as eighteen months. Some, he thinks, are excreted by way of the hepatico-intestinal route.

The persistence of tubercle bacilli may be due to the assumption of a more resistant morphologic state. This state may be merely temporary and representing some functional modification induced by the heightened resistance of the host. That a spore state exists, such as was accepted by Koch in his earliest writings, has not been generally credited. The gram-staining, granular type of Much may represent either a more resistant or a degenerative phase.

QUESTIONS TO BE SOLVED

The foregoing review of the intimate relation between tubercle bacilli and the tissues of the host clearly indicates that our knowledge on this subject is still unformed. We do not know what it is which in man and cattle leads now to the cessation of the disease, now to progression. We do not know what is lacking in such species as the guinea-pig, rabbit and monkey to prevent the steady, irresistible encroachment of the bacilli, or what it is in such species as rats and mice which suppresses the infection in an early stage or at the start.

In particular, the relative share of cellular and humoral factors, of phagocytosis and of antibodies, which are involved in all types of infection and parasitism, remains to be worked out. Thus far the weight of opinion and evidence seems to favor the cellular elements. The humoral elements, it should be borne in mind, represent contributions from various distant groups of cells poured into the blood stream. Such contributions, it appears, can be stimulated only by products of tubercle bacilli, either metabolic or disintegrative, which have entered the blood or lymph stream. They are therefore called forth after infection. The cellular elements entering the tubercle must represent the primary factors in engaging the bacilli. In my vaccination experiments, referred to above, the immune humoral factor was evident in the treated animals in that the infection, after flooding the blood, failed to get a foothold in the capillaries of the lungs, where myriads of tubercles developed in the controls.

There may be, however, humoral elements of a general nonspecific character always present which may have much to do with deciding the course of the infection. Of these we know nothing in particular. Nor do we know anything definite of the primary resistance or vulnerability of the endothelial cells in different species which appear, for instance, in the endothelial elements of the pigeon. In this species, the pneumococcus, as shown recently by Kyes, is taken up promptly by such cells and made to disappear. On the other hand, the same cells take up mouse septicemia bacilli, but the pigeon invariably succumbs, and at the time of death the cells are loaded with bacilli.

SEARCH FOR METHODS OF INCREASING RESISTANCE

But there are different ways of approaching the same problem. Practical medicine does not wait for science to elaborate methods available in combating disease, but pushes ahead, often without any reliable guide to search for cures, and now and then succeeds in discovering important principles which serve, not only as weapons for man, but also as points of departure for important theoretical researches. So it has been in tuberculosis. The attempts to discover means for increasing the resistance of individuals toward tuberculosis and for inducing a healing of existing lesions have far outrun our knowledge of the phenomena of infection and immunity. In attempting to circumscribe and suppress tuberculosis in the human race, there are two chief means at hand. One is to suppress the infection in transit from individual to individual; in other words, to break the cycle in its fourth phase. The other is to increase the resistance of individuals toward a more or less ubiquitous infection or, expressed differently, to treat the host in such a way that the second phase of the cycle, the multiplication of bacilli within the body, may be suppressed. The two methods tend to the same result and are cooperative to a large degree, but not wholly so, as we shall see farther on. There is a third possible method, that of destroying or rendering inert tubercle bacilli within the body by the direct action of some substance administered. This method would likewise interfere with multiplication and would have the same end effect as the second method. To increase resistance, the well known methods of vaccination with living or dead bacilli or of various preparations of the latter are the first to be considered. Here we must turn to animal experimentation to give us certain data.

The immunization of cattle against bovine tuberculosis by the use of a vaccine consisting of living human bacilli was first tried by von Behring, and is known as bovovaccination. The basis for this work was the relative harmlessness of the human type of tubercle bacilli for cattle, even after intravenous injection. Now and then cultures were encountered which in the doses ordinarily employed were fatal to calves after intravenous injection. In general, the animals stood such injections well, and when tested later with a dose of bovine bacilli, showed a considerable degree of resistance. The mode of testing was, as a rule, quite severe, and no absolute resistance to such test could be expected. The outcome of these many experiments was that while resistance was increased by vaccination, it declined and disappeared after a time. This disappearance has been generally assumed to be coincident with the final disappearance of the living bacilli of the vaccine from the host tissues. The test of such vaccinal immunity has not been thoroughly made as yet toward the natural disease, owing to the great cost. Usually such tests, consisting of exposure in infected herds, were associated with sanitary precautions and other preventive measures which weakened the value of the immunity test.

In experiments of this kind undertaken by myself, the resistance, as compared with controls, was well marked. At the end of about six months after the final test with bovine bacilli, the animals were killed

and certain lesions found and studied. These indicated that the bovine infection introduced by the test inoculation was at first retarded or latent and later progressive. The immunized animals, furthermore, showed changes in the anatomic character of the disease as well as changes in the histologic make-up of the lesions which brought the inoculation disease nearer to the pulmonary disease of human beings known as phthisis. Similar experiments made by myself and by Paul A. Lewis with tubercle bacilli killed by heat showed that dead bacilli produced no increased resistance. The use of living cultures of low virulence is thus indicated if any distinct increase of resistance is desired. How far it might be possible to replace the intravenous by the subcutaneous injection of the vaccine cannot be definitely stated. Heymans, who applied the latter method extensively, has not to my knowledge made any experimental tests of the acquired resistance by the intravenous injection of bovine cultures.

The von Behring method has brought to light a serious practical objection to the use of living cultures. When they are implanted in the body, the time of their final disappearance cannot be predicted. As stated above, they persist for many months in some organ or tissue. In the presence of animal parasites, injuries, and inflammatory conditions due to other infections, they may multiply and produce definite lesions. Administered to calves at an early age, they may persist in rare instances and reappear years after in joint affections and be shed in the milk. The joint infections are most likely preceded by traumatism; the udder infections by mastitis. These results do not encourage the use of living cultures on the human subject and, in view of the failure thus far of dead cultures to increase resistance, we must regard the specific immunization against tuberculosis as an open problem.

Considerable interest has been aroused by certain experiments of Römer on guinea-pigs, which showed that actively tuberculous animals resisted the multiplication of a second small dose of tubercle bacilli, while those which had been treated with virulent living and with dead bacilli, as well as the controls, became tuberculous. These results were later confirmed by Kraus on monkeys and by von Behring and by Calmette on tuberculous cattle. The chief interest in these experiments rests on the fact that a disease which is progressive within the body may ward off fresh infection from without. That the tissues of the tuberculous guinea-pig may produce lysis of tubercle bacilli was pointed out by Kraus in 1912. A more detailed and thorough test of this phenomenon was published by Manwaring and Bronfenbrenner in 1913. In preliminary tests they found that after the injection of certain strains of tubercle bacilli into the peritoneal cavity of normal guinea-pigs, the bacilli underwent rapid changes leading to involution forms and loss of staining capacity. Eliminating as far as possible this error by choosing their strains carefully, they found that tubercle bacilli could be recovered quantitatively from the peritoneal cavity of normal guinea-pigs, but only about 65 per cent. from the peritoneal cavity of tuberculous guinea-pigs. The disappearance is ascribed to lysis and this to specific changes in fixed peritoneal cells.

That animals which have passed through the primary stage of infection should be more resistant need not surprise us, for the entire fabric of vaccination and artificial immunization is based on this doctrine. It is not so clear why the primary disease should not likewise be checked. Among a number of possible factors to account for this situation several may be mentioned:

1. Different tissues have different degrees of natural resistance, and the progress of the infection may at least in some cases be due to the accidental occurrence of metastatic processes in certain tissues. Thus, in rabbits the kidneys are as vulnerable as the lungs, if not more so. In guinea-pigs, macroscopic disease of the kidneys is exceedingly rare. The omentum of the guinea-pig following intra-abdominal injections of tubercle bacilli is always involved to some degree; after subcutaneous inoculation, never. The udder of cows is diseased in from 1 to 2 per cent. in spontaneous cases. It is, however, a very vulnerable organ, as shown by intravenous inoculations. In the spontaneous disease it is well protected, at least for a time, from invasion from primary foci.

The skin and subcutis are to all appearances more resistant than many other tissues, and immunity should show itself here more promptly than elsewhere. The relative immunity of the skin and subcutis is shown now and then by the absence of any local lesion following minute doses of attenuated bacilli. The nearby glands, however, are always diseased. It would seem as if in such cases the few bacilli left in the subcutis are suppresed and destroyed and those which are carried to the nearest lymph node find there the conditions for multiplication. The relative infectiousness of tubercle bacilli in different territories is well illustrated by the experiments of Findel, who found that for producing disease in guinea-pigs from 6,000 to 19,000 times as many tubercle bacilli were needed when fed than when inhaled.

The progress of tuberculosis once started in the guinea-pig may consist largely in the multiplication of bacilli in organs and tissues of a low degree of resistance. It may also depend to a certain degree on accidents which favor the approach to such organs. On the other hand, the resistance of the tuberculous animal to superinfection is readily broken down by slightly increased dosage, and is successful only when very minute doses come into play, as pointed out by Römer himself. Granted that Römer's inferences are correct in this, that a tuberculous focus once under way prevents the successful lodgment of the same infection in minute doses from without, we are still in the dark as to the fate of an infection of higher virulence. Knowing that strains of tubercle bacilli vary considerably in virulence, we cannot assume on the strength of Römer's experiments that all superinfection will be excluded.

Römer asserts as a result of his experiments that most if not all tuberculous infection dates back to early life. The large number of positive tuberculin tests in children give support to this assertion. The recrudescence of the disease during adolescence and later is referred to an early massive dose. Why this early dose should not have promptly displayed its energy and developed a progressive fatal disease, in view of the high susceptibility of early life toward all infections, needs explanation. A view more in accord with the general facts of infection and resistance would be to assume that the recrudescence is due to untoward conditions arising in modern life in the careers of most human beings, which not only reduce general resistance, but also create in one way or another special

places of lowered resistance, as in the calf which carries the human type of bacillus; introduced as vaccine, until parturition creates a locus of lowered resistance in the udder, or through injury in the joints, or through parasitism. The gradual increase of resistance toward infections in general with age, which manifests itself not only in the species subjected to a given disease, but also in species which are not exposed to or afflicted with such a disease in nature, as in experimental animals, must also enter as a factor in favoring early and warding off later infection. Thus, O. Bang has shown that although horses are insusceptible to infection with the avian type of tubercle bacilli, colts respond to inoculation and may succumb to it.

RELATION TO PRACTICAL MEASURES

The facts and inferences presented by Römer are of interest from the standpoint of public health because of the derived practical measures which might gain headway. Thus it might be argued that there is no need of quarantining and suppressing infection, because a little tuberculosis is good for children, and adults cannot infect themselves anyway. Opposed to these measures we may assemble a number of important objections. We can never quite know when infection will be light or massive. We cannot tell whether the one infected is below par and will soon be a victim. We cannot tell how virulent any infection may prove to be. Lastly, we cannot tell when any given infected individual becomes again susceptible, because we cannot tell when the first process is extinguished. There is every reason, therefore, for continuing adequate, rational measures for the restriction of tubercle virus in transit. The susceptibility of the adolescent or adult may be no greater without than with the preliminary early dose. This is indicated by the comparative immunity of adults against bovine infection. In any case, for some time to come there will be enough infection about even with all precautions in operation to give the "vaccinal" dose to many in our congested centers of population.

The special aspect of acquired immunity introduced by the experiments of Römer is of sufficient interest to warrant a repetition of his work. His experiments with so-called animalized bacilli, which he obtains by removing and crushing tuberculous lymph nodes associated with the primary lesion, are not sufficiently numerous and conclusive wholly to meet the objection that in his earlier experiments the culture bacilli used for the second inoculation are not the equals of the bacilli which have been in the body for months, which have successfully met the increasing immunity of the host, and which are capable of continuing the invasion. On the whole, I think that the theory of von Behring and Römer that all infection dates from early life should be accepted with caution and reserve. My own view is that a bacillus coming from without into the lungs has as good a chance, other things being equal, as one carried there from some existing internal focus. If the internal infection is "massive" and the fresh infection light, the former is more likely to produce a focus of disease than the latter. If the fresh infection is massive and the other light, the fresh infection is likely to produce disease rather than is the metastatic process. This seems to me a safe attitude until more attention shall have been given to Römer's theory. It is probable that a more careful study of bovine tuberculosis may be of assistance. Here we have a spontaneous disease, agreeing in most points with the human disease. Very minute, detailed study of the lesions at necropsies should give us the information desired. To demonstrate superinfection it would be necessary after a careful exclusion of secondary processes to find in the lungs foci of different ages as indicated by the degree of necrosis, calcification and liquefaction.

USE OF PRODUCTS OF BACILLI

Passing from the problem of living and dead bacilli as immunizing agents, we come to the use of the so-called products. Among these, tuberculin, the substance which passes into the culture fluid from tubercle bacilli and which resists destruction by boiling, has enjoyed the greatest prominence since its discovery in 1890, when it was supposed to have marvelously curative powers. This prominence has been maintained in spite of the disappointment following a more detailed study of its real significance. The appearance of the phenomenon of anaphylaxis as a working problem in 1904 gave a new impetus to the further study of the tuberculin reaction because it agreed so closely with the reaction of hypersensitiveness.

It had been rather puzzling that a state of hypersensitiveness to tuberculin could not be brought about either by tuberculin itself or by dead tubercle bacilli. In a long series of unpublished tests made some years ago, I failed to obtain more than a fall in weight following treatment with heated tubercle bacilli. In 1910, Baldwin described a method with which an acute anaphylactic shock can be produced by postorbital injection of tuberculoprotein following sensitization by the intraperitoneal route. Krause, continuing the same work, found that the process of sensitization does not alter the resistance of animals to experimental tuberculous infection. Austrian, somewhat later, was able to produce active and passive anaphylaxis in guinea-pigs with a watery extract of pulverized tubercle bacilli by using the same method. Guinea-pigs made hypersensitive to this extract were not protected to any degree against experimental infection with tubercle bacilli. He found that "hypersensitiveness in guinea-pigs and rabbits exerts a neutral or baneful influence on a subsequent tuberculous infection." It should be mentioned that Baldwin found that guinea-pigs sensitized by intraperitoneal injection failed to react by the same route, but reacted when injected intracardially and postorbitally.

From these experiments of Krause and Austrian it would seem as if the introduction of tuberculoprotein was of no significance, or else harmful, in immunization. Yet it would be premature to conclude that the same is true for the human being. The guinea-pig is indeed hypersusceptible to tuberculosis, and recoveries are unknown, except, perhaps, after the use of highly saprophytized cultures. The energy required to lift the guinea-pig to an immune level cannot but be far greater than is needed for man, and may be unattainable. The apparently injurious effect of the sensitization in the guinea-pig may eventually be found to be due to a stronger but unsuccessful reaction.

The efforts of Much to separate the tubercle bacillus into its constituent antigens deserves mention, because they may aid in interpreting the obscure phenomena of tuberculosis resistance. Much separated bacilli into protein, fatty acid lipoids, neutral fat, and toxin. These he calls partial antigens. Each of these substances, if not denatured in the unlocking of the bacilli with heat and acids, produces its own antibody. Much

claims that antibodies cannot be produced unless the bacilli have been opened up (*aufgeschlossen*) by suitable methods. Yet according to Römer a first inoculation of guinea-pigs leading to an active process produces resistance to fresh bacilli inoculated later. In this case the original bacilli must have been "opened up" by the guinea-pig tissues in order to bring about the increased resistance.

MODIFICATION OF THE TUBERCLE BACILLUS

During the second or multiplicative stage of the parasite cycle it is highly probable that tubercle bacilli regain some of their parasitic characters or strengthen those weakened by cultivation, just as some of the anthrax bacilli from cultures promptly assume the characteristic capsule after inoculation, while the rest are destroyed. During active multiplication all organisms are more or less vulnerable, and it is probable that during this period the surviving bacilli exercise new or augmented functions imposed on them by the developing immune bodies of the host. Such changes have been observed in organisms more labile and more subject to immune bodies than tubercle bacilli. Resistance to destruction in the bodies of immune animals was observed by Levaditi and Roché in the spirilla of tick fever. From three to six days after the crisis in the rat, a relapse occurs. The serum in the stage of relapse acts actively on spirilla of the first attack, but not on those of the relapse period. The antibodies are absorbed or bound by the spirilla of the first attack, but not by those of the relapse. Mesnil and Brimont made the interesting observation that in goats infected with *Trypanosoma brucei* there is after a time a progressive adaptation of the trypanosomes to the immune bodies of the goat's serum. Trypanosomes taken from such an animal at an interval of several weeks are no longer identical. The second lot of trypanosomes are immune to serum drawn with the first lot, while they are not immune to the serum taken at the same time. As a result, mice inoculated with trypanosomes of the second lot plus serum corresponding to the first lot die, while those inoculated with the reverse combination survive.

Bacilli coming directly from another host, as is the case in the natural disease, stand in some way under the influence of the developed immune bodies of that host, and are in far better position than culture bacilli to gain a foothold. It is well known in laboratories that small doses of such bacilli will accomplish more than large doses of cultivated organisms.

In the process of entry or infection, the actual significance of the sensitization which such bacilli are under as they come from a preceding host deserves more attention than it has hitherto received. Basing myself on the analogy between sensitized bacteria and toxin-antitoxin mixtures, I have attributed to the former greater penetrative power.

In ascribing to the bacteria coming from a patient with a well developed case of tuberculosis special resistive characters, we must distinguish between such characters as meet the immediate situation in the next host and such as permanently raise the virulence of the infecting agent. The former would simply disappear and reappear in each cycle, the latter would manifest themselves by greater virulence and a tendency of the induced disease toward epidemic proportions. We have no direct evidence to show that the usual passage of infection from individual to individual increases virulence, since the tendency of all infectious diseases has been toward a lower level of virulence. The tendency toward higher virulence may be there, but it may be concealed by a slow upward movement of host resistance due to selective elimination on the one hand, and by the natural elimination of too virulent strains on the other.

In general it is to be presumed that if the condition of the host changes during the course of the disease toward a greater specific resistance or immunity, the parasite cannot remain the same, for it must meet the new condition in order to survive and be excreted. Capacity for variation and adaptation and for temporary adjustments on the part of bacteria have been pointed out in many special researches. All procedures for the cultivation of tubercle bacilli tend to modify the bacilli to a certain degree, perhaps by tending to select and eliminate spontaneous varieties. Thus the cultivation of tubercle bacilli on blood serum, blood serum with glycerin, egg, egg with glycerin, and agar with glycerin leads to slightly different strains according to the special medium used. After a time, notably with the bovine type, highly luxuriant cultures are obtained on mediums, such as glycerin agar, on which multiplication at the start is impossible. At the same time the virulence diminishes as multiplication becomes more active. Just what changes take place have not been definitely pointed out. I have taken the position that the change in the direction of more abundant multiplication is in some way associated with a change in the outer envelope, be it the ectoplasm or a special membrane which, while favoring nutritive processes, makes the organism more vulnerable. If such profound changes may be induced by artificial cultural influences, it stands to reason that the living tissues are equally, if not more, capable of molding the bacilli in prolonged contact with them. There exist, therefore, various indications that tubercle bacilli undergo cyclic changes in their journey through the body on account of the growing resistance of the host. What these changes are we do not know; but arguing from analogy, we may suppose that the tubercle bacilli after a time develop resistant protective envelopes which at the same time check metabolism and stop multiplication.

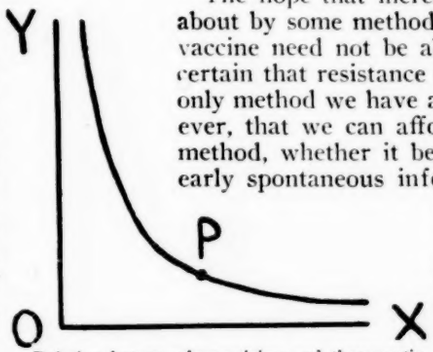
Before concluding this last phase of the cycle, I need to call attention to the bearing of modifications of tubercle bacilli due to artificial cultivation on the interpretation of laboratory experiments. The gap between saprophytized bacilli from long-standing cultures and such still in the caseous material coming from a disintegrating focus must be very great. Such cultures passed through calves, for instance, and recovered many months later had not gone back to the original animalized condition, for the recovered cultures grew from the start luxuriantly. Whether such cultures, through passages, ever completely regain their original status has not been taken up.

The use of cultures is probably responsible for the statement that after injection polymorphonuclear leukocytes appear and later on disappear, taking no part in the development of tubercles. The leukocytes are probably attracted chemotactically by the suspending fluid and the disintegrating bacilli, always present in cultures after several weeks.

This phase of our subject, dealing with cyclic and other changes in bacteria, cannot be cleared up until epizootics among small animals are subjected to a close detailed study of all individuals involved. All that can be stated here is that miscellaneous evidence points to

a cycle of varying resistance in each host, as well as slow movements of virulence up and down extending through many hosts and subject to many collateral influences.

The suppression of tubercle bacilli in the tissues directly through chemotherapeutic agents is now being prosecuted in various laboratories, and the ultimate outcome of such researches must be awaited with patience. One or more decades ago such ventures would have been regarded with a high degree of skepticism; but the success obtained since then in the direct elimination of trypanosomes and spirochetes, and the possibilities of still greater successes in this field make the realization of some restricting therapeutic agent in tuberculosis by no means chimerical. Since experiments in this field must first of all be conducted on laboratory animals, the results obtained thereby are likely to be both overvalued and undervalued, as it will require more or less time to adjust immunizing and remedial agents to the human disease. The differences between induced and spontaneous infections must not be overlooked. The relation between immunizing and therapeutic experiments on induced and spontaneous diseases is best shown by the accompanying diagram of a hyperbola. As I have stated elsewhere, the problem in laboratory experiments is to save the life of the animal; the by-products of the disease are not considered. In human disease, the treatment is concerned not so much with saving life as with curing more or less chronic affections. If we represent by distances on OY the degree of disease to be overcome, and on OX the amount of treatment to be applied to bring about a given resistance or cure, we usually begin in the laboratory on the upper limb of the curve which represents a fatal disease, and by vaccination or other methods rapidly bring the disease down to P. From there on, local lesions or the residual disease is cured with difficulty, the curve approaching OX very slowly. In the case of human diseases we usually begin treatment at such a point as P, and the rather spectacular drop (or immunity) obtained in the laboratory does not follow. The line of complete cure, OX, is approached only very slowly.



Relation between immunizing and therapeutic experiments on induced and spontaneous diseases.

RELATION OF PRESENT ASSURED KNOWLEDGE TO PRACTICAL PROBLEMS OF PREVENTION

While the practice of medicine cannot and does not wait for scientific discovery to supply the desired preventives and remedial agents, but goes its own pace, feeling and groping its way into unknown territories to search for the hoped-for cure, it nevertheless adjusts itself promptly to the acquisitions of medical research. The campaign against tuberculosis has always involved two distinct problems, to prevent the spread of infection and to cure the disease in the individual. These two problems are distinct, but related. One reacts on the other. To cure is equivalent to checking the spread of the infection. But I am not certain that they should not be kept distinct. One or the other will predominate if both are attempted. The movement against tuberculosis among the people, as indicated in the work of antituberculosis societies, has been, at the beginning, chiefly toward the prevention of disease by campaigns against the spitting habit. The movement as developed among the medical profession has been chiefly toward the cure of the disease, especially in early cases.

It is at least open to question whether the latter movement was logically indicated as a starting point. If quantity of infection is the menace, and if minute doses of infection may and do frequently lead only to a local disease which in many cases takes care of itself, it is obvious that the first step in the control of tuberculosis is to render harmless the most severe cases, so to secure them that the helpless bystanders do not suffer by taking in "massive doses." This is the first duty of the community. If there remains a surplus of energy, then it should be devoted to treating incipient disease. Only in this way can the disease be surrounded and the circle made smaller and smaller each year, until the germ is eventually eliminated. To give elaborate treatment to incipients and to neglect the menace of advanced cases is to keep the door wide open for more incipients. We are not now questioning the treatment in early cases, but simply the order of attack of the problem. No matter whether we adopt the view of von Behring that all tuberculosis is started early in life, or that it may enter the system at any time, the quantity of infection plays a prominent part in both theories, and a reduction of the quantity of infection is logically the thing called for.

The hope that increased resistance may be brought about by some method other than that of using living vaccine need not be abandoned as yet, but it is quite certain that resistance caused by the living virus is the only method we have at present. I do not think, however, that we can afford to play with this dangerous method, whether it be through the use of cultures or early spontaneous infection, but should work against all infection. For the time being there is still opportunity for getting small doses and a mild infection, and it will be time enough to consider this phase of the subject when the sputum of all dangerous cases has been satisfactorily disposed of.

Another result of both experimental and practical studies is the fact that there is a considerable store of natural resistance to the disease and this natural resistance is maintained by a normal life. If it is possible to restore patients with tuberculosis to health by applying natural remedies, such as rest in bed in the open air, and proper diet, it is obvious that we are utilizing the reserve of natural resistance to suppress the early disease. Hence the ordinary, simple, normal life may be relied on to suppress infection even before we are aware of its presence. The idea that we must first become diseased to be protected rests on a false understanding of what immunity, so called, consists of. It is nothing more than tissue reserves called into action. That there is a great underlying store of natural resistance, making early tuberculosis a curable disease in many cases, which has been demonstrated by the indefatigable labors of sanatoriums and private physicians, is the most valuable lesson we have learned, and a most important incentive to normal, hygienic living.

The Development of Learning.—Learning hath his infancy, when it is but beginning and almost childish; then his youth, when it is luxuriant and juvenile; then his strength of years, when it is solid and reduced; and lastly his old age, when it waxeth dry and exhaust.—Bacon, Essays Civil and Moral.

ACUTE PULMONARY ABSCESS TREATED WITH ARTIFICIAL PNEUMOTHORAX *

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In presenting these cases I wish to call attention to a simple, rational method of treating acute abscess of the lung, namely, artificial pneumothorax. This treatment is being universally used in pulmonary tuberculosis. A few cases of its use in old chronic lung abscess have been reported, but I have been able to find only one report in American medical literature of the use of compression of the lung in any condition similar to these acute pulmonary abscesses. Greer[1] reports a case, following pneumonia, of interlobar empyema draining through the bronchus, in which he effected a cure by compressing the lung with nitrogen, all symptoms clearing up in three weeks. I have only two cases to report, but as this work has been done without any previous experience as a guide, and is, so far as I know, an original method of procedure in these acute abscesses, I feel that it is of sufficient importance to report fully at this time.

REPORT OF CASES

Last July, I was called into consultation with Drs. White, Walker and Sterling Ruffin, to consider the best method of treating a case of acute lung abscess which had followed operation on the nose. I advised artificial pneumothorax as being a rational procedure, although its use heretofore had been confined entirely to pulmonary tuberculosis, with the exception of a few cases of chronic lung abscess of a year or more in duration, and one case of interlobar empyema reported by Greer. All modern medical literature advised rib resection with drainage, but I could find no reference anywhere to the use of lung compression.

CASE 1.—Mr. H. C. P., aged 32, mining engineer, was injured in an elevator in a mine about the middle of June, 1916, sustaining a fracture of the superior maxilla and nose. He was brought to Washington and operated on, June 17, 1916, by Dr. Walker, who repaired the nasal septum, and Dr. White, who did a herniotomy. The patient's temperature became normal after the operation, and he was apparently making an uneventful recovery. June 26, which was nine days after the operation, his temperature suddenly rose, and ranged between 101 and 102 F. This was accompanied by pain in the chest and considerable sweating. The leukocytes were found to be between 20,000 and 30,000. Examination by Dr. Ruffin showed a moderately marked pleurisy with effusion at the left base, and a small amount of fluid was obtained by Dr. White on aspiration. The temperature and leukocytes remained high, however, and July 12, which was sixteen days after onset of symptoms, the patient suddenly coughed up a considerable amount of purulent sputum, and an abscess was discovered in the lower portion of the right lung. A roentgenogram was taken by Dr. Groover. The symptoms improved considerably during the week following the rupture of the abscess, but the patient was coughing up pus at frequent intervals, and the leukocytes still remained in the neighborhood of 20,000. July 22, the temperature began rising again and remained high, often going above 102. July 29, I was called in and asked concerning the possibility of using compression of the lung. I advised waiting a short time, hoping for a spontaneous recovery, especially in view of the fact that the operation would be somewhat in the nature of an experiment. We were also rather reluctant to collapse the abscessed lung on account of signs of pleurisy with effusion on the opposite side; but the patient gradually became worse. He was losing weight, had profuse sweating at times, considerable expectoration, and the temperature and leukocytes remained high. August 12, one month after the onset of the symptoms, I started a compression of the lung, injecting 150 c.c. of air into the pleural sac. I gave him another small injection, August 14, and a larger one, August 22, following which his temperature became normal, and with the exception of two days, remained so thereafter. He then received the injections about once a week, taking in all ten treatments. All cough and expectoration had stopped by September 15, and the leukocytes became normal, September 20. He gained 20 pounds after starting the pneumothorax, and was discharged as cured, October 15. The only unpleasant symptom caused by the gas in this case was some shortness of breath and cyanosis on one occasion following an unusually large injection.

October 15, Dr. C. W. Richardson called me in to use artificial pneumothorax in a case of acute lung abscess following tonsillectomy. Following is the case history:

CASE 2.—Mrs. O. B., aged 27, had the tonsils removed by Dr. C. W. Richardson, Sept. 9, 1916, at the Episcopal Hospital. Three days after the operation she had some pain in the left chest which disappeared in twenty-four hours, and she was discharged, September 15, six days after operation, apparently well. The day after her return home, or seven days after operation, pain in the left chest returned, accompanied by high temperature. One week later she suddenly coughed up a large amount of pus. She returned to the hospital, September 28, with a temperature ranging between 102 and 104, pulse from 120 to 140, and respirations between 30 and 35. Her cough was very frequent and severe, and was accompanied by a large amount of purulent expectoration with a foul odor. A roentgenogram taken by Dr. Selby showed a large abscess in the left lung involving most of the upper lobe and some of the lower lobe. Dr. Charles White was called into consultation, and suggested pneumothorax rather than rib resection. The symptoms persisted until I saw the patient, October 15, which was four weeks after the onset of the trouble. She was in a condition of extreme prostration, and I started a collapse of the lung immediately, although I did not feel at all optimistic as to the outcome. The temperature, pulse and cough improved the day following the first treatment, and, October 17, two days later, I gave her a second treatment. That night she coughed up an unusually large amount of pus, and on the following day the temperature was normal and remained so thereafter. The pulse and respiration became nearly normal, and the cough diminished materially. October 21, another injection was given, and, October 24, just nine days after the beginning of the pneumothorax, the patient was discharged from the hospital and returned home. I gave her a treatment at her home, November 4, and all symptoms have disappeared. She will receive several more injections, about two weeks apart, in order to insure complete healing.

SUMMARY AND CONCLUSIONS

1. The mortality of acute lung abscess treated medically is high, approximately 60 per cent., and the percentage of cures is low, about 10 per cent.

2. The results with rib resection and drainage are better, but we still have a mortality of about 30 per cent. Moreover, this operation often leaves a patient with a draining sinus which may persist for a year or more.

3. Artificial pneumothorax is a rational method of treatment in all cases having a communication with the bronchus, and gives promise of appreciably lowering the mortality and raising the percentage of cure in acute abscess of the lung.

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* Read before the Medical Society of the District of Columbia, Nov. 8, 1916.

1. Greer, A. E.: Interlobar Empyema Treated by Artificial Pneumothorax, THE JOURNAL A. M. A., April 1, 1916, p. 1019.

A COMPARATIVE STUDY OF THICK AND THIN BLOOD SMEARS FOR DIAGNOSIS OF MALARIAL FEVERS

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The difficulties of specific diagnosis in chronic malaria, as well as in many of the more acute manifestations, has been appreciated by physicians generally, and more especially by public health investigators in connection with index determinations. With discovery of the malarial organism by Laveran, in 1880, it first became possible accurately to differentiate malaria from other febrile conditions, and later to separate the three types of infection. The well known thin smear methods of blood examination have distinct advantages for purposes of morphologic study; with the presence in a large proportion of cases, however, of but few parasites in the peripheral circulation, requiring at times hours of study for demonstration, methods have been sought whereby a larger amount of blood could be examined so as to make possible increased accuracy of diagnosis. The first use of thick films was made by Ross, and the technic was modified later by Ruge and others. Dampwolf, in a study of malaria at Dar-es-Salaam, made a series of thick and thin comparisons. Of 9,758 adults and children, 8.5 per cent. were found to be positive on thin smear examination, and of 5,770, 25.7 per cent. were found positive on thick film examination. James, in a study of malaria in the Canal Zone, examined 100 cases by both methods, obtaining 94 per cent. positive, using thin films. Thick unfixed stained specimens were used by Muehlens in an investigation of malaria at Emden, Germany; he found both thick and thin smears positive 131 times, and the thick positive with thin negative, 102 times.

The object of this paper is to present the results of a series of comparative studies of thick and thin blood smears carried on in connection with malarial index examinations of the United States Public Health Service under the direction of the late Surgeon R. H. von Ezdorf, and with a number of cases examined and followed in the Marine Hospital.

While smears were being taken for the purpose of establishing an index in North Carolina, during the fall of 1913, one thin and one thick smear was secured from 3,613 apparently healthy individuals to determine the percentage of carriers in the various localities. For this purpose the thick smears alone were used, while the thin smears were examined to note any blood changes and to make differential counts. From the number of positive findings, 526 "thicks" in which the parasites had been demonstrated in five minutes' time, the $\frac{1}{12}$ oil immersion being used with a 3 × and 4 × ocular, were selected and compared with the corresponding "thins." Of the 526, only 125 of the "thins" were confirmed, thirty minutes being given to a slide. Thus it will be readily seen that 263 hours were consumed in examining the "thins," confirming only 125, while only forty-three and one-third hours were spent on the thick films, in which time 526 were found positive.

The method employed in the dehemoglobinizing and staining of the smears is the one regularly used in the laboratory of the Malarial Investigation Division, and has been fully described by von Ezdorf.[1]

1. Von Ezdorf: Reprint 159, Public Health Reports.

PROCESS OF DEHEMOGLOBINIZING

The slides are placed in a 2 per cent. hydrochloric acid solution in 70 per cent. alcohol, until the smears are thoroughly decolorized, which will require at times from one to several hours. The process may be hastened by first soaking the slide in water for from one to two minutes, until the process of laking out the hemoglobin begins, and then placing in acid alcohol for completion; but the greatest care must be exercised if the latter addition is made, owing to the fact that there is danger of washing the cells out, and consequently lessening the likelihood of finding the parasites. After complete fixation and laking out of the hemoglobin, the slides should be removed from the acid alcohol and washed in a brisk stream of tap water for fifteen minutes, in order to remove and neutralize the acid absorbed. The acid alcohol may be used several times until saturated with hemoglobin.

The stain employed is a modification of the original Giemsa, omitting the glycerin; but any modification of the Romanowsky method may be used.

Stock Solution.—1. Eosin, 1 gm.; distilled water, 1,000 c.c.

2. Azur *II*, 1 gm.; distilled water, 1,000 c.c.

Ten c.c. of each of the two solutions are added to 40 c.c. of water (preferably distilled), and the smears are stained for not less than thirty minutes. This gives a dark purple appearance to the smear, while the chromatin of the parasites takes a dark red stain (polychrome) with blue protoplasm, and the nuclei of the leukocytes take a deep blue. There is an advantage in using 10 c.c. of each of the stock solutions of eosin and azur to 40 c.c. of water, as the weaker solutions (5 c.c. of each to 40 c.c. of water) fail to give the deep red of the chromatin in the usual time for staining. This is especially noticeable in staining gametes. If rapidity is desired, full strength of the stock solution may be used, or good results can be obtained by using Wright's stain in the usual way.

APPEARANCE OF THE THREE TYPES OF PARASITES

It is of interest to give an outline which may serve as a useful guide in differentiating the organism in the thick film, and distinguishing the normal from the abnormal appearance. It is easy for even the most casual observer, provided he is familiar with the normal constituents of the blood, to recognize the malaria organisms in the red blood cells; but it takes the experienced eye to recognize them in a dehemoglobinized preparation, as they no longer retain all of their normal characteristics. Therefore experience, and experience alone, can bring about confidence and accuracy.

Simple Tertian.—(*a*) The young ring forms, as a rule, are larger than those of the estivo-autumnal and quartan.

(*b*) They are found in varying sizes, from the young schizont to the segmenting forms.

(*c*) When the rings are complete, the cytoplasm opposite the chromatin is more likely to be thickened in this form than in any other.

(*d*) The deep red chromatin dot, with the deep blue dash of cytoplasm, not completing the ring, is quite characteristic.

(*e*) The chromatin dot usually occurs singly.

(*f*) The gametes are usually irregular in appearance, and there is less pigment than in the gametes unaffected by acid.

(*g*) The segments of the dividing forms are not in close contact as in the unruptured cells of the thin films.

Estivo-Autumnal.—(*a*) In active cases the young ring forms are more numerous than in the tertian and quartan.

(*b*) Rings are smaller and more delicate in appearance, with a small amount of cytoplasm which is not thickened at any point to any appreciable degree.

(*c*) All of the rings are apparently of the same age and size.

(*d*) A double chromatin dot is present in many of the rings.

(*e*) Crescents are present in chronic cases which in many instances will be found to be distorted, with irregular outlines. Some may appear perfectly straight and shrunken on account of acid, but never lose their pigment.

Quartan.—(*a*) The young ring forms are much heavier and contain much more protoplasm than is found in the tertian and estivo-autumnal.

(*b*) The chromatin dot takes a deeper red stain than the other two varieties.

(*c*) There is less tendency toward branching, and the older forms of the rings are much more apt to remain in contact than those of the tertian.

(*d*) Bands with heavy black pigment are present which are not to be found in the other two varieties of organisms.

(*e*) The gametes have less tendency to lose their characteristics than in the tertian. Heavy black pigment is quite characteristic.

ADVANTAGES OF THE METHOD

Besides being a great time-saving device, this method has a great advantage over the thin film method, in that it gives an adequate idea of the degree of infection, both before and at various times during treatment. In addition, the process of dehemoglobinizing and staining works automatically in that the slides may be left in acid alcohol over night and stained for twelve hours or more without any appreciable damage to the parasites.

It is to be remembered in examining the blood of latent cases of malaria for parasites that they are often very hard to find, sometimes only a single parasite being found even in many fields of the thick film (after a few minutes' search) and it has been our custom in such scanty infection to seek for others for confirmation unless the first was distinctly clear and its morphology could be made out easily. The advantages are much greater to find a second parasite by the "thick thin film" when the hemoglobin has not been laked out with water or in the "thick film," when the specimens have been rendered clean by dehemoglobinizing with acid alcohol.

I wish to emphasize that this method, although requiring experience to bring about accuracy in distinguishing the parasites, has a great advantage over any practical method we have at hand, in that it is a time-saving device as well as more accurate and efficient, where chronic cases are involved. Also, if it is employed in the diagnosis of all suspects of malaria, and the patient treated accordingly, certainly it will lessen the likelihood of the mosquito receiving infection, and consequently weaken the endless chain which continues the propagation of malaria, namely, man to mosquito and mosquito to man.

THE LONGEVITY OF ADULT ASCARIDS OUTSIDE THE BODY OF THE HOST

ITS BEARING ON ANTHELMINTIC TREATMENT

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DETROIT

Wharton[1] has recorded experiments in which he kept the eggs of the common roundworm of man, *Ascaris lumbricoides,* alive in Kronecker's salt solution (physiologic sodium chlorid solution to which 0.06 gm. of sodium hydroxid per liter is added) for from six to twelve days. While I was in the service of the federal Bureau of Animal Industry, I made some tests to determine the length of time that the common roundworm of the pig, *Ascaris suum,* could survive outside the body of the host. A number of these worms had been collected and thrown into about a 5 per cent. dilution of liquor formaldehydi and left for a few minutes. They were taken out of the formaldehyd and nine of them placed in Kronecker's solution and nine placed in physiologic sodium chlorid solution. The height at which the solution stood when made up was marked on the glass dishes containing them, and once a day distilled water was added to replace that lost by evaporation. The condition of the worms was noted every day except Sunday, and the room temperature noted every day except Sunday from the fifth day to the end of the experiment.

During the course of the experiment, the room temperature ranged from 27.5 to 30 C. (from 81.5 to 86 F.). The last survivior in the physiologic sodium chlorid solution, a male, was alive on the fourteenth day after removal from the host, and was found dead on the fifteenth day. Three females survived for nineteen days in Kronecker's solution; two of these survived for twenty-four days, and one of these was alive on the twenty-sixth day after removal from the host and was found dead on the following day. In another experiment in which ten specimens of *Ascaris suum* were kept in physiologic sodium chlorid solution, one worm was still alive on the fifteenth day. It appears, then, that ascarids may survive for fifteen days in physiologic sodium chlorid and for twenty-six days in Kronecker's solution.

The particular interest which attaches to this experiment is its bearing on a very common idea in connection with anthelmintic treatment. It is quite commonly believed, and the belief is shared by many physicians and veterinarians, and is expounded in reputable medical literature, especially the older literature, as well as in the advertisements of commercial houses, that when a patient infested with worms is fasted for twelve or twenty-four hours, the worms become hungry as a result of this lack of food, and that when an anthelmintic is administered, especially when it is given in some such vehicle as milk, the hungry worms will ingest the anthelmintic and thereby become poisoned.

There are two or three objections to such a belief. In the first place, when these worms can survive for twenty-six days in such an unnutritious medium as Kronecker's solution, it is unlikely that they would suffer the pangs of hunger after twelve or twenty-four hours in contact with the collapsed walls of the intestine and the relatively abundant content of food, epithelial débris and secretions which is still present after such an interval. Moreover, it is known that the

1. Wharton: Philippine Jour. Sc., 1915, **10**, 19.

digested or partly digested food in the lumen of the host intestine is not the only food of parasitic worms, and it may constitute in some cases a very small part or no part at all. Garin says that nematodes of the digestive tract live at the expense of the wall of the digestive tract in all cases, and not on food in the lumen. According to Garin, some worms (*Heterakis papillosa*) live on mucus and intestinal juices; others (*Oxyuris, Ascaris lumbricoides, Ascaris suum*) live on epithelial cells; others (*Ascaris rotundata, Physaloptera clausa, Habronema microstoma*) live on lymphatic cells and lymph; others (*Strongylus, Ancylostoma, Graphidium, Trichuris*) live on blood. He states that the attack on the mucosa may be mechanical (with teeth, etc., as in the case of hookworm) or chemical (by digestive secretions, as in the case of whipworms). Much remains to be learned in this connection, but it is known that such forms should suffer no inconvenience whatever during the period in which the host animal is deprived of food. Finally, it is not necessary to suppose that anthelmintics must be voluntarily ingested by the parasitic worms in order that the worms may be destroyed. It is likely that they are either ingested without volition or that they exercise their lethal effects in some cases by absorption, as may be the case with such volatile anthelmintics as chloroform.

In any case, the preliminary fasting, as well as the preliminary purgation, previous to anthelmintic treatment is, of course, a very desirable procedure. But its utility lies in the fact that it removes the bulky food mass which might otherwise protect the worm against the anthelmintic action.

THE COMPLEMENT FIXATION TEST IN THE DIAGNOSIS OF TUBERCULOSIS*

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The great desirability of reaching an early diagnosis in tuberculous infection has led to much work being done in laboratories in the search for some test which would make such a diagnosis possible, with the result that the various tuberculin reactions were discovered, as well as other methods, as the serum skin reaction of Bronfenbrenner.[1] All of these diagnostic methods, however, have proved more or less unsatisfactory in the differentiation of active and inactive tuberculosis and a criterion of cure.

As early as 1910, Ruppel and Rickmann[2] made use of complement fixation in the diagnosis of tuberculosis in cattle, using old tuberculin as an antigen, and obtained positive results only in tuberculous animals, although no fixation occurred in some known to be tuberculous. Stimulated by this work, numerous investigators, notably Caulfield and Beatty,[3] Calmette and Massol,[4] and Hammer,[5] demonstrated that complement fixation could be obtained in a certain proportion of cases of human tuberculosis with the use of several different antigens, and it was the studies of Wassermann and Bruck on complement fixation in tuberculosis which led them to investigate, with Neisser, the question of the possibility of devising such a test for the diagnosis of syphilis, an investigation resulting in the discovery of the Wassermann reaction.

Until 1914, however, when Besredka published the results of his work, no complement fixation test for tuberculosis had been devised which was considered of any great value in the diagnosis of the disease or as useful as some other and better known diagnostic measures. In 1913, Besredka[6] described a special method of cultivating the tubercle bacillus on a medium consisting of broth, egg white and egg yolk, and in 1914 he[7] described the results which he obtained with an antigen made by filtering cultures grown on this medium, in the diagnosis of tuberculosis by complement fixation. His results were most encouraging, and were soon confirmed by Inman[8] and by Bronfenbrenner,[9] using antigens prepared by Besredka.

The chief difficulty encountered in devising a complement fixation test for this disease appears to have been in securing a suitable antigen, for enough successful work has been on record for a long time proving that in tuberculosis antibodies are formed which may be demonstrated by complement fixation, and that the test is a true specific reaction and not lipotropic in nature, as is the Wassermann reaction. Various substances have been used for antigens, as suspensions, variously prepared, of the tubercle bacillus; the various tuberculins; extracts of the tubercle bacillus, and antigens prepared by extracting tuberculous tissues. Varying degrees of success have been obtained with many of them, but, as has been stated, until the use of Besredka's antigen, none had given results which made the test of practical value to the physician.

In 1915, I[10] described my results with complement fixation in tuberculosis, using an antigen prepared from several strains of the human tubercle bacillus grown on an alkaline broth containing egg white and egg yolk, a medium practically identical with that employed by Besredka; but the antigen, instead of being a simple filtrate of the culture, was prepared by extracting with alcohol in the shaking machine and in the incubator, after which it was filtered through a fine filter paper and titrated for its antigenic qualities. It will thus be seen that the antigen which I first used consisted of a filtrate of an alcoholic extract of several strains of the human tubercle bacillus plus the culture medium in which the organisms had been grown. The most important factor in this antigen, aside from the thorough extraction of the bacilli, consisted in its being polyvalent, this form of antigen being suggested by the fact that there are marked variations of both human and bovine tubercle bacilli in both cultural relations and infective power. I have since used antigens made in the same manner but prepared from the surface growth of the various strains of the bacillus grown on Vedder's starch medium, and these antigens have given even better results than the one originally used, and have the advantage that they are not contaminated with the medium on which the bacilli are grown, and

* From Department Laboratory No. 2, Southern Department, U. S. Army, El Paso, Texas.
* Read at the meeting of the El Paso County Medical Society, Nov. 6, 1916.

1. Bronfenbrenner, Joseph: Proc. Soc. Exper. Biol. and Med., 1914, **11**, 90.
2. Ruppel and Rickmann: Ztschr. f. Immunitätsforsch., 1910, **6**, 34.
3. Caulfield and Beatty: Jour. Med. Research, 1911, **24**, 122.
4. Calmette and Massol: Compt. rend. Soc. de biol., 1912, **73**, 120.
5. Hammer: Deutsch. tierärztl. Wchnschr., 1912, **20**, 593; München. med. Wchnschr., 1912, **59**, 1750.
6. Besredka, A.: Compt. rend. Acad. d. Sc., 1913, **156**, 1633.
7. Besredka, A.: Ztschr. f. Immunitätsforsch., 1914, **21**, 77.
8. Inman: Compt. rend. Soc. de biol., 1914, **76**, 251.
9. Bronfenbrenner, Joseph: The Complement Deviation Test with Besredka's Tuberculin, and the Occurrence of Tuberculosis Among Syphilitics as Diagnosed by This Test, Arch. Int. Med., December, 1914, p. 786.
10. Craig, C. F.: Am. Jour. Med. Sc., 1915, **150**, 781.

which, in my original antigen, appeared to render it very unstable as regards antigenic power.

Since the publication of my paper a large amount of research has been devoted to this subject, and efforts have been made to improve the antigen and render its preparation more simple. This appears to have been accomplished by Miller and Zinsser,[11] who have used with marked success an antigen prepared by grinding the tubercle bacilli with table salt in a suitable receptacle and then adding distilled water to isotonicity. The resulting mixture is used as the antigen. With this very simple antigen the authors mentioned have secured most excellent results which, if confirmed, would appear to settle the question of the antigen in the complement fixation test for tuberculosis. They recognize the importance of using several strains of the bacillus, saying, "It seems, however, to be important that a number of different strains should be used — that is, that the antigen should be polyvalent."

Before I discuss my own results with this test, a brief review of the results of recent investigators of the subject will be of interest.

In the first stage of tuberculosis Besredka found the reaction always positive, in the second stage nearly always positive, and in the third stage the reaction was often partial or negative. However, he found that with his antigen syphilitic serums often gave a positive reaction and that sometimes normal serums reacted positively.

Inman, using Besredka's antigen, tested 100 cases of pulmonary tuberculosis and found 95 per cent. positive; of 50 persons suspected of pulmonary tuberculosis but having no definite symptoms sufficient to base a diagnosis on, 60 per cent. gave a positive reaction. Of 100 patients in hospital for conditions other than tuberculosis, 24 per cent. gave positive results but never in high dilutions. He concluded that a positive reaction, especially in high dilutions, should be considered as evidence of an active tuberculous lesion, while a negative reaction indicated either the absence of the disease or an arrest of a former lesion.

Debains and Jupille,[12] using the same antigen, obtained the following results: In Stages 1 and 2, with the patients in fair condition, 90.3 per cent. gave a positive reaction; in Stages 2 and 3, with the patients in bad condition, 81.3 per cent. gave a positive reaction. They found that 24 per cent. of serums giving a positive Wassermann reaction also reacted positively with the Besredka antigen, while 17.3 per cent. of patients suffering from other conditions gave a positive reaction, and 3.2 per cent. of normal persons tested were also positive.

Bronfenbrenner,[9] working with Besredka's antigen, obtained 98.3 per cent. of positive reactions in active tuberculosis, and 55.5 per cent. of positives in convalescents presenting no symptoms of the disease, while cases strongly suspected of tuberculosis but in which no definite diagnosis had been made gave 75 per cent. of positive reactions. In treated and untreated cases of syphilis, however, he obtained 24 per cent. of positive reactions with this antigen, and 8 per cent. of his controls reacted positively; but he states that the substance or substances in Besredka's antigen giving these false positive reactions can be removed, and that the antigen, thus purified, is specific for tuberculosis. In another paper, Bronfenbrenner,[13] in discussing the causes of the different results obtained with this antigen, calls attention to the importance of a polyvalent antigen in this test. He says, "Moreover, it followed from our comparison of different tuberculins used as antigens in the complement deviation test that in tuberculosis (as well as in other diseases) there exists a certain variability of specificity with different strains of tubercle bacilli, which necessitates, probably, the preparation of a polyvalent antigen containing not only several human but also bovine strains."

Miller and Zinsser, using their antigen, obtained the most favorable results that have yet been reported. In thirty-two patients in Stage 1, all with active symptoms, but sixteen of whom were negative for tubercle bacilli in the sputum, all gave a positive reaction; in 110 patients in Stage 2, all but twelve of whom showed tubercle bacilli in their sputum, 108, or 98 per cent., gave a positive reaction; of eighty-four cases in Stage 3, all but one case having a positive sputum, eighty-three, or 98 per cent., gave a positive reaction. The case that was negative is stated to be very far advanced.

Miller[14] writes that he has tested 113 inactive or arrested cases, and that of these only ten were positive.

As regards doubtful cases, Miller and Zinsser state that they tested 140 such cases, of which thirty-two, or 22.8 per cent., were positive. Of forty-five cases giving a positive Wassermann reaction, two gave a positive reaction with this test, but one of these had a tuberculous peritonitis. In comparing this test with the skin tests with tuberculin, they state that nearly all the healed cases gave positive tuberculin reactions, but the complement fixation test was negative.

Since the publication of my original paper I have continued observations on this subject as opportunity presented, and further investigation has only strengthened my conviction that in the complement fixation test for tuberculosis we possess the most valuable diagnostic method that has yet been devised for the early recognition of the disease and the best index of its activity.

The general technic of the test is similar to that employed in making the Wassermann test, which has been described in a previous communication.[15] A human hemolytic system is used instead of sheep's corpuscles, guinea-pig serum is used as complement, and the serum to be tested is inactivated at 56 C. (132.8 F) for one-half hour. The antigen, as has been stated, consists of an alcoholic extract of several strains of the tubercle bacillus prepared as described. The final reading of the result of the test is made within two hours after the last incubation in the water bath, an important point, for even the strongest positive reactions may become partially or completely negative, with this test, if the tubes are allowed to stand, even in the ice box, longer than two hours. The antigen should be titrated frequently against a known positive serum, as it loses strength much more rapidly than do the antigens employed in the Wassermann test.

The tests made in this study of the subject may be divided into three groups as follows: Group 1, cases in which the diagnosis was pulmonary tuberculosis, either active or inactive; Group 2, cases in which the diagnosis was of some other disease; Group 3, normal individuals.

11. Miller and Zinsser: Proc. Soc. Exper. Biol. and Med., 1916, **23**, 134.
12. Debains and Jupille: Compt. rend. Soc. de biol., 1914, **76**, 199.
13. Bronfenbrenner, Joseph: Biochem. Bull., 1914, **3**, 381.
14. Personal communication to the author.
15. Craig and Nichols: Bull. 3, Surgeon General's Office, 1913.

RESULTS OF THE TEST

Group 1.—In this group the cases were divided into three general classes: Class 1, incipient cases of tuberculosis; Class 2, moderately advanced cases, and Class 3, far advanced cases. In addition the cases were classified as *active and inactive*,[16] and each of the classes mentioned contained examples of each of these types of infection.

The total number of cases of tuberculosis tested has been 209, of which 183, or 87.5 per cent., gave a positive reaction, and twenty-six, or 12.4 per cent., gave a negative reaction. In 159 of the cases which reacted there was absolute inhibition of hemolysis, while in twenty-four there was almost complete inhibition. It has been found by experience that with this test a reaction should generally be interpreted as positive in which there is over 50 per cent. of inhibition of hemolysis, as a considerable number of tuberculous cases react weakly, especially if the disease is progressing rapidly.

TABLE 1.—RESULTS OF THE COMPLEMENT FIXATION TEST IN PULMONARY TUBERCULOSIS WITH REFERENCE TO THE ACTIVITY OF THE INFECTION

Activity	Positive		Negative		Total No.
	No.	Per Cent.	No.	Per Cent.	
Active	144	96.6	5	3.3	149
Inactive	39	65.0	21	35.0	60
Totals	183	87.5	26	12.4	209

Table 1 gives the results of the complement fixation test in the total number of cases of tuberculosis tested divided into active and inactive infections. It will be noted that the percentage of positive reactions is greater in the active than in the inactive cases of the disease, being 96.6 per cent. in the active and but 65 per cent. in the inactive cases. In considering these figures, it should be remembered that many of the inactive cases that reacted positively were believed to be cured and no clinical symptoms were present, while, on the other hand, some of these cases were considered merely quiescent and still showed tubercle bacilli in the sputum. The test was most useful in this class of cases in showing that so many persons suffering from incipient tuberculosis and thought to have been permanently arrested or cured reacted positively, and demonstrates the value of the test as a criterion of cure in this disease.

As I have stated in a previous article,[17] "The percentage of positive results in active tuberculosis of the lungs, i. e., 96.6 per cent., is as high as that obtained in my experience with the Wassermann test in secondary syphilis, for in 2,200 cases of syphilis in that stage of the disease I have obtained positive reactions in 96.2 per cent. of the cases."

In all the cases of inactive tuberculous infection tested, the symptoms of the disease had disappeared, and in thirty-eight of them the sputum was negative for the tubercle bacillus. From the percentage of positive results obtained in this class of cases it is evident that the complement fixation reaction is a very valuable method of detecting infections which are still active, although clinically the patients may appear to be cured. The results prove that complement binding bodies are present in the blood serum of tuberculous patients when symptoms of infection are slight or absent, and it is my belief, and that of most recent investigators, that a positive reaction with this test means the presence of an active focus of infection somewhere in the body, and that the test will prove of the greatest value in differentiating really cured infections from those which are merely quiescent. It may be stated that many of the patients who reacted positively, and at that time were thought to be cured, have since developed symptoms, and the tubercle bacilli have reappeared in their sputum.

As has been stated, the tuberculous patients were divided into three classes: incipient cases, moderately advanced cases and far advanced cases. Table 2 gives the results of the test in the three classes mentioned. There are several points of interest which merit consideration. In the incipient cases it will be noted that those classed as active gave a positive percentage of 96.7, while the inactive cases gave 62.5 per cent. of positive results. In all of the latter cases, symptoms were practically absent and the sputum was negative for the tubercle bacillus in all the cases giving a positive reaction, fifteen in number. Though this was so, complement binding bodies were present in sufficient amount to give a positive reaction, the only symptom of tuberculosis which could be demonstrated in these cases at the time they were examined.

The highest percentage of positive results occurred, however, in active infections in the moderately advanced class of patients, in which, of sixty-two active infections, sixty-one, or 98.3 per cent., gave a positive reaction. The percentage of positive results in the inactive cases, thirty-two in number, was 68.7, and here again the great value of the test is noted in demonstrating that these cases, although quiescent or cured clinically, were still active serologically. The subsequent history of many of these inactive and moderately advanced cases was followed, and at least 80 per cent. of them are known to have relapsed clinically.

TABLE 2.—COMPLEMENT FIXATION IN TUBERCULOSIS IN RELATION TO THE CLASS OF INFECTION

Class	Activity	Positive Reaction		Negative Reaction		Total No.
		No.	Per Cent.	No.	Per Cent.	
1. Incipient cases	Active	30	96.7	1	3.2	31
	Inactive	15	62.5	9	37.5	24
		45	81.8	10	18.1	55
2. Moderately advanced cases	Active	61	98.3	1	1.6	62
	Inactive	22	68.7	10	31.2	32
		83	88.3	11	11.6	94
3. Far advanced cases	Active	54	96.4	2	3.5	56
	Inactive	4	100.0	0	0.0	4
		58	96.6	2	3.3	60

Contrary to what might be thought, the positive reactions in the far advanced and active cases were less than in either the incipient or moderately advanced active infections. This has been the experience of others in studying this test, and is explained apparently by the fact that in certain far advanced cases of tuberculosis, complement binding bodies disappear from the blood, the severity of the infection apparently preventing their development. The difference in results was slight, however, the percentage of positive reactions in the far advanced cases being 96.4, as compared with

16. The term "inactive" as used here indicates cases in which no active clinical symptoms are present. Many of these cases are simply latent and, as shown by the test, really have an active focus somewhere in the body just as occurs in syphilis. In other words, there are enough living bacilli present to give rise to the body or bodies producing complement fixation, and, in my opinion, as long as this is true such cases cannot be considered as cured.

17. Craig, C. F.: Am. Jour. Med. Sc., 1915, **150**, 787.

96.7 per cent. in the incipient cases and 98.3 in the moderately advanced cases.

It will be noted that there were four far advanced cases which were classed as inactive. In these cases the clinical symptoms were in abeyance and the lesions in the lung were quiescent. In all of them the test gave a positive reaction, thus indicating the presence of an active infection, although symptoms and physical signs spoke in favor of an arrestment of the disease.

Group 2.—This group included all cases tested having a clinical diagnosis of some disease other than tuberculosis. In all, 450 persons were tested, of whom 350 were suffering from syphilis and gave a positive Wassermann reaction. Of the total number examined, twenty-two, or 4.4 per cent., gave a positive reaction with the complement fixation test for tuberculosis. Of the positive cases, eighteen were syphilitics, while the remaining four were all suffering from disease of the respiratory tract, four from acute bronchitis and two from acute pharyngitis.

As noted, eighteen, or 5.4 per cent., of the 350 syphilitics tested gave a positive reaction with this test. That the positive result was not due to syphilis, however, I believe is demonstrated by the fact that so small a proportion of syphilitics gave such a result, and the history of many of the cases which did react positively. Thus, five had definite lesions in the lung; three had a rise of temperature in the afternoon at the time the test was made, and four afterward showed tubercle bacilli in the sputum. The remainder, while showing no symptoms of the disease, were, in all probability, in the incipient stage of tuberculosis. In my previous paper on this subject I gave the results of the test in 150 syphilitics, all positive to the Wassermann test, and all negative with the complement fixation test for tuberculosis. The present figures are not so good as this, but the few cases which have reacted positively can, without much doubt, be considered as tuberculous as well as syphilitic, for it would be strange, indeed, if one could test 350 syphilitics without finding a certain proportion infected also with tuberculosis.

Of the patients suffering from other diseases at the time the test was made, all gave a negative reaction with the exception of the four mentioned, all suffering from acute conditions of the respiratory tract. It is impossible to state at this time whether or not these cases are tuberculous, but from my experience with the test I believe that they are. A large number of diseases were tested, and with the exceptions mentioned the reactions were negative in all. I believe that the results obtained demonstrate that this test will not give positive results with diseases other than tuberculosis.

Group 3.—The persons tested in this group were young healthy soldiers, free from any sign or symptom of tuberculosis. Of this class there were 200 men tested, and but one, or 0.5 per cent., gave a positive reaction. This one man, it is interesting to note, developed an afternoon rise of temperature, night sweats, and loss of weight shortly after the test was made, and has since had two hemorrhages; but no tubercle bacilli have ever been found in his sputum.

The fact that the complement fixation test for tuberculosis was negative in so large a number of persons suffering from other diseases and in health speaks strongly in favor of its being a specific test for active infection, for among this number of persons there must have been many with encapsulated tuberculous lesions, in whom any of the tuberculin tests would have given a positive reaction.

COMMENT

The work here recorded, as well as the latest observations of Bronfenbrenner, Miller and Zinsser, and others, demonstrates, I believe, that the complement fixation test for tuberculosis has reached a stage of development at which it can be used with confidence by the practitioner in the diagnosis and as a criterion of the cure of tuberculous infection.

From my own experience I can mention many examples of tuberculous infection diagnosed by this means which it would have been impossible to diagnose with any other method at our command, and in so-called cured infections, when this test gave a positive result, a clinical relapse occurred in the vast majority of the cases that were followed. While it certainly would be premature to consider that a negative result with this test indicates cure or absence of the disease, the fact remains that the test is negative in many cases that have not relapsed clinically, and in healthy persons and in diseases other than tuberculosis. Repeated negative results, extended over a considerable period of time, should be sufficient, in my opinion, to warrant a statement that the infection is cured or that the disease is not present, in instances in which a diagnosis is in doubt. As with the Wassermann test, a single negative is of little value in excluding the disease. Variations occur in the strength of the reaction from day to day comparable with those which I have shown to occur with the Wassermann reaction, and these variations may be sufficient to render a positive reaction negative or weak at intervals, so that a single negative reaction should never be relied on in excluding tuberculosis. Although these variations in the strength of the reaction occur very rarely, the fact that they do occur renders a single negative test of little value if one desires to exclude tuberculosis.

I believe that a positive reaction with this test indicates the presence of an active tuberculous focus, and that as long as the reaction remains positive, the patient should not be considered as cured. This belief has strengthened with every test which I have made, and has been confirmed by the results obtained with the test by recent investigators. I believe that the complement fixation test for tuberculosis has come to stay, and that it is only a question of time before it will be as widely used and as useful to the physician as is the Wassermann test for syphilis.

Rice Growing and Malaria.—So far as we know, the best example of the influence of an economic situation on public health work is that from California which began with the new commercial enterprise, rice growing. In the four years since rice was first grown for commercial purposes in the state, the returns have been very great, and the acreage has increased fully 100 per cent. Rice growing makes possible the cultivation of land otherwise useless, with a profit of millions of dollars to the state. Obviously, here is an industry that has come to stay. But, unfortunately, the conditions ideal for the cultivation of rice—land flushed with standing or gently moving water—are ideal also for the growth of mosquitoes. Of the myriads of mosquitoes found during the long summer season in rice areas, 70 per cent. were of the *Anopheles*, or malaria-bearing variety. These sections of the state were malarial enough before the rice growing began; of late the increase of the disease has been so marked as to constitute a menace and to require definite measures for abatement in individual districts.—Alice Hamilton, *Survey*, Jan. 20, 1917.

SYPHILIS AS AN ETIOLOGIC FACTOR IN MONGOLIAN IDIOCY*

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The etiology of Mongolian idiocy remains as obscure today as when first described by Downs[1] in 1866. As one might expect *a priori*, the theories are numerous and comprehensive. The help of the omnipresent and omnipotent *Spirochaeta pallida* and *Bacillus tuberculosis* has frequently been invoked.

TABLE 1.—SUMMARY OF PATERNAL HISTORIES

Father	Number of Case												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Age at present.....	46	35	42	29	46	42	36	48	50	38	27	39	42
Age when married.	25	22	23	22	42	22	32	39	31	22	21	26	22
Age when patient was born.....	43	33	41	25	45½	39	33	48	50	33	26	37	33
History of syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—
History of venereal infection.....	—	—	—	*	—	—	—	—	—	—	—	—	—
Present or past evidence of syphilitic infection....	—	†	—	—	—	—	—	—	—	—	‡	§	—

* Had gonorrhea.
† Had diffuse rash on body, itching, which lasted two months when 25 years old.
‡ Has skin eruption; frequent headaches.
§ Has heart trouble.

Downs, in his original communication, favored the tuberculosis hypothesis. To quote, "They [Mongolian idiots] are for the most part instances of tuberculosis in the parents." It would be beyond the scope of this paper to enter into an exhaustive consideration of the various opinions concerning the etiology of this characteristic type of idiocy.

We merely wish to go on record as opponents to the recent views of Stevens,[2] who tries to incriminate congenital syphilis as the underlying cause. Stevens' views are best appreciated by quoting from his latest published article:[3]

> In a previous article I presented results which indicated, with a high degree of probability, that the condition known as Mongolian idiocy was one of the manifestations of congenital syphilis.
>
> At the outset it may be stated that the findings in these cases [Series 2] confirm, in almost every particular, the results of Series 1.
>
> While the serologic tests seem to demonstrate *beyond question* that this condition is a result of syphilitic infection, it is not, however, to be considered a form of frank cerebrospinal syphilis. The characteristic facies of the Mongolian syndrome and the dwarfing of the body make it appear probable that the syphilis acts primarily on some of the endocrine organs, possibly the pituitary body. [Italics ours.]

A critical review of Stevens' articles shows that his deductions are scarcely warranted by the data presented.

All the conclusions are based on an examination of the blood serum and the cerebrospinal fluid, particular significance being attached to the cerebrospinal fluid examination, especially the results of the globulin and colloidal gold chlorid tests. The latter test, when positive, is probably due to an increased globulin, which in turn predicates inflammatory or irritative involvement of the central nervous system. The logical conclusion from Stevens' findings, provided they were accepted, would be that mongolism is a cerebrospinal type of congenital syphilis and not a form of syphilis acting "primarily on some of the endocrine glands, possibly the pituitary body."

In the report of Stevens' second series of eighteen cases, he says:

> 1. The Wassermann reaction on the blood serum [Noguchi modification] . . . was positive in 33 per cent. (six out of eighteen) of the cases.

According to the table given, two are designated with + + +, two with + +, and two with +. On the basis of these figures it hardly seems justifiable to us to state without reservation that the reactions were positive in 33 per cent. Those with the + and + + should at least have been repeated.

Churchill and Austin[4] state that "the + + + reaction gives a positive diagnosis, but in the absence of any suspicion clinically, a repetition of the + + + reaction should be obtained. When the clinical picture is entirely negative and the Wassermann test is + or + +, a repetition on the blood collected later will frequently be negative." Furthermore, from the description of the technic it appears that only one antigen was used, "acetone insoluble extract of beef heart." At least two antigens, and better three or four, should have been used.

> 2. The Wassermann reaction on the spinal fluid was positive in 11.1 per cent. (two out of eighteen) of the cases.

These reactions Stevens designates by a single plus (+).

> 3. Pleocytosis was present in no case.

TABLE 2.—SUMMARY OF MATERNAL HISTORIES

Mother	Number of Case												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Age at present.....	43	32	42	26	44	38	30	41	43	40	23	37	45
Age when married.	21	19	22	19	40	16½	26	31	24	24	17	24	25
Age when child was born.....	39	30	39	21	43½	35	27	41	43	35	22	35	36½
History of syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—
History of venereal infecton.....	—	—	—	—	—	—	—	—	—	—	*	—	—
Number of pregnancies.....	4	6	10	2	6	8	2	8	8	8	4	6	8
Number of miscarriages.....	1	0	0	0	1	1	0	0	1	0	1	0	0
Age of fetus in mo. at miscarriage...	6	..	..	..	3	6	..	..	2	..	2		
Which pregnancies miscarried.....	1st	..	..	..	4th	1st	..	..	5th	..	2d		
No. of stillbirths...	0	0	0	0	0	0	0	0	0	0	0	0	0

* Had leukorrhea several years ago.

This seems to show an absence of any meningeal involvement, and is hard to reconcile with an increase of globulin in every case.

> 4. The globulin content was increased in 100 per cent.

This is difficult to reconcile with an absence of pleocystosis in every case.

> 5. The gold chlorid reaction was present in 100 per cent. of the cases [90 per cent. in the first series].

The analysis of the chart shows that this assertion is scarcely warranted. Cases 3, 4, 8, 9, 10, 19 and 20 (seven out of the entire twenty-one cases, or 33 per

* From the Department of Pediatrics, Western Reserve University, School of Medicine, and the Babies' Dispensary and Hospital.

1. Downs, J. L.: Clinical Lectures and Reports, London Hospital, 1866, **3**, 259.
2. Stevens, H. C.: Mongolian Idiocy and Syphilis, THE JOURNAL A. M. A., May 15, 1915, p. 1636; The Spinal Fluid in Mongolian Idiocy, ibid., April 29, 1916, p. 1373.
3. Stevens, H. C.: Footnote 2, second reference.
4. Churchill, F. S., and Austin, R. S.: Frequency of Hereditary Syphilis, Am. Jour. Dis. Child., October, 1916, p. 355.

cent.) show practically negative curves. As authority for this assertion we quote Miller, Brush, Hammers and Felton[5]:

TABLE 3.—SUMMARY OF HISTORIES OF THE OTHER OFFSPRING

Offspring	Number of Case												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Number of children living	4	5	8	2	5	8	2	6	7	6	3	4	5
Present or past evidence of syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—
Skin at birth	—	—	—	—	—	—	—	—	—	—	—	—	—
Bloody rhinitis	—	—	—	—	—	—	—	—	—	—	—	—	—
Bones	—	—	—	—	—	—	—	—	—	—	—	—	—
Eyes	—	—	—	—	—	—	—	—	—	—	—	—	—
Ears	—	—	—	—	—	—	—	—	—	*	†	—	—
Teeth	—	—	—	—	—	—	—	—	—	—	†	—	—
Number of children dead	0	1	2	0	1	0	0	2	1	2	1	2	3
Cause of death§	..	—	—	..	—	..	..	—	—	—	—	—	—
Physical and mental condition of living children§	—	—	—	—	—	—	—	—	—	—	?	—	—

* One child has chronic suppurative otitis media.
† Five children had chronic suppurative otitis media; teeth in all children poor; one child has edema of feet.
§ The minus sign means that nothing suggestive of syphilis could be determined.

In spinal fluids otherwise negative, the occurrence of the gold reactions of this type (1111000000) is the equivalent of an absolutely negative finding and should be regarded as such. A colloidal gold reaction of the type 1121000000 is so commonly seen in spinal fluids otherwise normal that it probably possesses no significance, especially in cases clinically not luetic.

Thus of Stevens' first series the gold chlorid is positive in 66⅔ per cent., instead of 90 per cent. as claimed. In the second series, eliminating Cases 2, 10, 11, 12 and 18, we find the colloidal gold reaction positive in only 72.2 per cent., instead of 100 per cent. as claimed.

6. The color changes of the gold chlorid reaction are typical of cerebrospinal syphilis.

The author evidently considers anything from 1211000000 to 1244421000 as a positive reaction typical of cerebrospinal syphilis.

REPORT OF REINVESTIGATION

By a simple analysis of Stevens' reports, the evidence does not seem to justify the conclusions. Consequently, we have repeated the work on a different series of patients, thirteen in number, who were seen at the Babies' Dispensary and Hospital and the Cleveland City Hospital. In all these cases, in addition to careful personal and family histories, there have been meticulous physical examinations supplemented by the usual laboratory procedures.

Only typical cases of Mongolian idiocy have been used in this series, and we consider this important because in a few cases the question of differential diagnosis between mongolism and congenital syphilis is not easy. At present, we have under observation a congenital syphilitic in whom the fissured tongue, lips, depressed bridge of the nose, facies, physique and mental status strongly suggest mongolism.

In the cases reported by Van der Bogert,[6] the first child was a typical Mongolian, the second normal, and the third and fourth twins. One of the latter, on account of congenital syphilis, had a Mongolian facies, and is similar to the foregoing.

Laboratory Technic.—The Wassermann test of the blood serum and spinal fluid was done in all of the thirteen cases. In the performance of this test, four different antigens (all carefully titrated for antigenic, anticomplementary and hemolytic properties) were used in each case. With the exception of the antigens, the original Wassermann technic was followed, half quantities being employed. Stated in terms of the half quantities, we used 0.1 c.c. of blood serum and from 0.25 to 1 c.c. of spinal fluid, as shown in the accompanying tables. The antigens used were: (*a*) an alcoholic extract of guinea-pig or beef heart; (*b*) an alcoholic extract of human heart; (*c*) antigen A + 0.4 per cent. cholesterin, and (*d*) antigen B + 0.4 per cent. cholesterin.

The cerebrospinal fluids were also examined for the cell count, Ross-Jones and Pandy tests for increased

TABLE 4.—SUMMARY OF PERSONAL HISTORIES

Patient	Number of Case												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Which pregnancy	4	6	10	2	6	7	1	8	9	6	4	6	8
Present or past evidence of syphilis	—	—	—	—	—	—	—	—	—	—	—	—	—
Skin at birth	—	—	—	—	—	—	—	—	—	—	—	—	—
Bloody rhinitis	—	—	—	—	—	—	—	—	—	—	—	—	—
Bones	—	—	—	—	—	—	—	—	—	—	—	—	—
Eyes	—	—	—	—	—	—	—	—	—	—	—	—	—
Ears	—	—	—	—	—	—	—	—	—	—	—	—	—
Teeth	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Miller, S. R.; Brush, N. D.; Hammers, J. S., and Felton, L. D.: A Further Study of the Diagnostic Value of the Colloidal Gold Reaction, Together with a Method for the Preparation of the Reagent, Bull. Johns Hopkins Hosp., 1915, **26**, 391.

6. Van der Bogert, Frank: Congenital Syphilis, Simulating Mongolism, in One of Twins, Am. Jour. Dis. Child., January, 1916, p. 55.

TABLE 5.—LABORATORY FINDINGS

Case No.	Blood					Cerebrospinal Fluid															
	Wassermann Reaction					Wassermann Reaction					Cells per C.mm.	Globulin		Colloidal Gold Test							
	Amount of Serum Used, C.c.	Reaction with Antigen Number				Amount of Fluid Used, C.c.	Reaction with Antigen Number					Pandy	Ross-Jones	1	2	3	4	5	6	7	8	9	10
		1	2	3	4		1	2	3	4													
1	0.1	—	—	—	—	0.5	—	—	—	—	1	—	—	0	0	0	0	0	0	0	0	0	0
2	0.1	—	—	—	—	0.25 0.5	—	—	—	—	2	—	—	0	0	0	0	0	0	0	0	0	0
3	0.1	—	—	—	—	0.25 0.5	—	—	—	—	4	—	—	0	0	0	0	0	0	0	0	0	0
4	0.1	—	—	—	—	0.25 0.5	—	—	—	—	3	—	—	0	0	0	0	0	0	0	0	0	0
5	0.1	—	—	—	—	0.25 0.5	—	—	—	—	2	+	—	0	0	0	1	1	1	1	0	0	0
6	0.1 0.2	—	—	—	—	0.25 1.0	—	—	—	—	3	+	—	1	2	2	2	1	0	0	0	0	0
7	0.1 0.2	—	+	—	—	0.5 1.0	—	—	—	—	4	—	—	0	0	0	0	0	0	0	0	0	0
8	0.1 0.2	—	—	—	—	0.25 0.5	—	—	—	—	3	—	—	0	0	0	0	0	0	0	0	0	0
9	0.1	—	—	—	—	0.25 0.5	—	—	—	—	2	—	—	0	0	0	0	0	0	0	0	0	0
10*	0.1	—	—	—	—	0.5 1.0	—	—	—	—	42	+	+										
11	0.1	—	—	—	—	0.25	—	—	—	—	0	—	—	0	0	0	0	0	0	0	0	0	0
12	0.1	—	—	—	—	0.5	—	—	—	—	4	—	—	0	0	0	0	0	0	0	0	0	0
18	0.1	—	—	—	—	0.25	—	—	—	—	3	—	—	0	0	0	0	0	0	0	0	0	0

* Six antigens were used. No colloidal gold test was done in this case, in which there were a few erythrocytes in the spinal fluid.

globulin, and the colloidal gold test. One spinal fluid containing erythrocytes was, of course, used only for the Wassermann reaction.

In preparing the gold solutions, great care was exercised, and only solutions which were clear to both transmitted and reflected light were used. Triply distilled water from a block tin condenser was used, and all glassware was cleaned as directed by Miller, Brush, Hammers and Felton.[5]

Family Histories.—1. We have succeeded in obtaining parental histories from all of the thirteen patients. In none of these was there a frank history of any syphilitc infection, or any subsequent symptoms or signs of syphilis. Had such evidence been obtained, we would have made special note of it, as we can appreciate the possibility of a coexisting mongolism and congenital syphilis. A summary of these histories is given in Tables 1 and 2.

2. The histories of all brothers and sisters, both living and dead, were obtained, and the causes of death were particularly inquired into. In no case could death be attributed to a syphilitic infection. In no family was more than one Mongolian encountered. This has been a common observation, although Babonneix and Villette[7] recently report four cases in one family. It seems more than likely that if mongolism were due to syphilis in the parents, the occurrence of more than one case in a family would be not infrequent. Details of these histories are given in Table 3.

Personal Histories.—The histories of the patients were carefully taken and can all be considered reliable. None of the usual manifestations of congenital syphilis could be found (Table 4).

The complete laboratory findings in all of our cases are given in Table 5. The serum Wassermann was negative in all cases. In Case 7, there was one + reaction with Antigen 2 (cholesterin antigen). The Wassermann reactions on the cerebrospinal fluids were consistently negative. No special fluid gave a cell count above four cells per cubic millimeter.

The globulin tests in Cases 5 and 6 were positive to the Pandy test, but negative to the Ross-Jones test, while Case 10, which contained a few red blood cells, gave a positive reaction to both.

The colloidal gold test was negative in every instance, and in only two cases did the reaction read as high as 2. It is needless to say that no test was done in Case 10, the spinal fluid in which contained a few red blood cells.

CONCLUSIONS

From careful anamneses, physical examinations and the laboratory tests now available, it cannot be stated at the present time that mongolism is due to congenital syphilis.

2500 East Thirty-Fifth Street.

7. Babonneix, L., and Villette, J.: Arch. de méd. d. enfants, 1916, 19, 478.

Smoking Fresh Water Fish.—In 1915 the United States Bureau of Fisheries at Fairport, Mich., began experimenting with the smoking of fresh water fish. These experiments have yielded interesting results. The bowfin, or grindle, which has been regarded as practically worthless, has been found to yield a good product, when properly smoked, with excellent texture and flavor. Further experiments are being made to obtain a product of improved appearance and quality. The bowfin is abundant in the Great Lakes and in sluggish waters from Minnesota and New York to Florida and Texas. By this means another food product has been added to the general supply.

NOTE ON THE BACTERIOLOGY OF THE SPINAL FLUID IN POLIOMYELITIS AND SCARLET FEVER

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CHICAGO

During the routine examination of a patient admitted to the contagious ward of the Cook County Hospital with a diagnosis of scarlet fever, a lumbar puncture was performed because of marked rigidity of the neck. The spinal fluid was under increased pressure, the cell count was 28, principally of lymphocytes, and the globulin tests were positive. The spinal fluid was inoculated into dextrose broth and dextrose agar, and a pure culture of a small gram-positive coccus was obtained within thirty-six hours. The organism exhibited both the cultural and the morphologic characteristics of the micrococcus described by Nuzum[1] as occurring in the cerebrospinal fluid in poliomyelitis. Repeated inoculations yielded pure cultures of the same micro-organism. From the nasal discharge a micrococcus was obtained resembling the organism in the spinal fluid. The organism from the nasal secretion was agglutinated by the antipoliomyelitic serum[2] in a dilution of 1:500; control organisms did not so agglutinate.

Clinically the case resembled the cerebral type of poliomyelitis, and the subsequent course of the disease made the admitting diagnosis quite doubtful. Later the child developed bronchopneumonia from which he died. The necropsy confirmed the diagnosis of poliomyelitis and bronchopneumonia. In another patient admitted with the diagnosis of poliomyelitis, the micrococcus was obtained both in direct smear and in culture.

The ease with which these organisms were obtained raised the question of contamination. Accordingly a study of the spinal fluid of the children in the contagious ward was undertaken. Lumbar punctures were performed in fifty patients having scarlet fever and associated exanthems, as diphtheria and varicella. The patients varied in age from 1 to 14 years, and were principally under 7. The children were in all stages of the disease, from the very onset with the acute rash and high fever to the convalescent period. The spinal fluid was inoculated in dextrose agar and dextrose broth with the same technic as in the previous cultures, and also into litmus milk, blood agar, ascites, glucose agar, aerobically and anaerobically by the pyrogallic acid and sodium hydroxid method described by Mallory and Medlar[3] in obtaining the *Bacillus scarlatinae* from the buccal cavity of patients with scarlet fever. All cultures were incubated for five days at 37 C. (98.6 F.). The cultures remained sterile, except for four tubes in which the *Bacillus subtilis* and *Staphylococcus albus* were obtained as contaminations. The pressure of the spinal fluid was found to vary with the mental and physical attitude of patients. In quiet children it flowed 30 to 60 drops a minute; in crying or restless patients it generally appeared to be under pressure. The cell count varied from 1 to 20 cells per millimeter. For the fifty patients it averaged 8 cells, but in eleven it varied from 10 to 20. Lymphocytes predominated from 80 to 90 per cent.

1. Nuzum, John W.: Bacteriologic Findings in Cerebrospinal Fluid in Poliomyelitis, THE JOURNAL A. M. A., Nov. 11, 1916, p. 1437.
2. Nuzum, John W.: The Production of an Antipoliomyelitic Serum, THE JOURNAL A. M. A., Jan. 6, 1917, p. 24.
3. Mallory, F. B., and Medlar, E. M.: The Etiology of Scarlet Fever, Jour. Med. Research, 1916, 35, 209.

SUMMARY

The micrococcus described by Nuzum as occurring in the cerebrospinal fluid of poliomyelitis is not present in the cerebrospinal fluid of acute exanthems.

The pressure of the spinal fluid varies with certain physiologic states of the patient.

The average cell count of the cerebrospinal fluid in scarlet fever is 8 cells per cubic millimeter. Lymphocytes predominate.

ISOLATION OF THE TYPHOID BACILLUS FROM DUODENAL CONTENTS, OBTAINED BY EINHORN TUBE

F. M. Durham, M.D., Columbia, S. C.

J. P. M., man, was referred to Dr. S. E. Harmon by Dr. Mayer of Newberry, S. C., June 30, 1916, for gallbladder operation. Dr. Harmon and I examined the patient on the same day and made a diagnosis of gallbladder infection; but his condition was such that he was left in my care that he might be built up and that a more thorough diagnosis might be worked out.

The patient gave a history of having previously and recently undergone a serious illness of several weeks and of having been in declining health for several years. The temperature was of the irregular nature, usually characterizing chronic gallbladder infection, ranging from 98.6 to 100.5 F., and once going to 101.4. It was normal, however, the greater part of the time. The pulse usually remained in the eighties. The urine contained some albumin, and hyaline and granular casts, but cleared up after a few days' rest. The temperature and pulse remained good, but the patient's facial expression showed that he was below normal in resistance. I, therefore, advised against an operation, for in my opinion this man was evidently afflicted with something more serious than a mild gallbladder infection.

July 5, 1916, I sent a specimen of blood for a Widal test to a laboratory, and a positive paratyphoid test was reported.

On receipt of this report, the patient was given no food except a very light dinner, three hours after which he was encouraged to drink water at frequent intervals in order to get the stomach and duodenum clean. That night at 9 o'clock I inserted an Einhorn duodenal tube, fastening the part remaining out of his mouth to his night shirt. At 7 the following morning I aspirated the contents of the duodenum, and to my surprise obtained about 2 ounces of as pure looking bile as I ever saw, which was absolutely free from food. I sent this bile to the state board of health laboratory, requesting a culture for *Bacillus typhosus*. July 15, Mr. J. R. Cain, assistant bacteriologist, reported that the specimen contained a pure culture of typhoid bacilli.

Dr. F. A. Coward, director of the state board of health laboratory, reported that the bile was cultured directly in bouillon and on agar. In twenty-four hours pure cultures of a motile bacillus were obtained. This bacillus, which was gram negative, grew readily, and was agglutinated by serum from a patient with typhoid fever. An agar culture of the organism had been prepared, and was being kept at the laboratory for further study.

The patient was discharged, July 18, with a normal temperature, and promising to return within a few weeks for an abdominal exploration. I am informed that he was operated on out of Columbia about the latter part of October and died. The report of the operation was to the effect that the whole abdominal contents were so engorged, adhered and friable that the surgeon closed the incision without completing the operation.

This man was a typhoid carrier, and to the best of my knowledge and information this is the first time that duodenal contents, secured by the use of the duodenal tube, ever gave a positive *Bacillus typhosus* culture. I am fully convinced of the importance of a duodenal culture made from duodenal contents which have been secured by the use of a duodenal tube as a means of diagnosing typhoid carriers and obscure cases of typhoid fever.

Therapeutics

DISTURBANCES OF THE KIDNEYS

(*Continued from page 713*)

TREATMENT OF MERCURIC CHLORID POISONING

The first symptoms of mercuric chlorid poisoning are epigastric pain, nausea and vomiting, the vomitus sometimes containing more or less blood. The gastric symptoms may be almost entirely relieved by proper treatment, the success of which depends on the length of time between the ingestion of the poison and the treatment, and on whether the stomach was full or empty when the poison reached it. Diarrhea and signs of duodenal inflammation occur within a few hours, unless the poison was quickly vomited. If much mercury has been absorbed, stomatitis occurs on the second day.

If a tangible amount of mercury has been absorbed, there is soon a gradual diminution in the amount of urine passed, and after the first or second day there may be complete suppression. As noted in other acute metallic poisonings, total suppression of urine may not cause convulsions, as it ordinarily does in uremia, probably because some of the detoxicating functions of the kidneys may still be operative. After several days, delirium may occur, followed by coma, while the heart shows gradual failure.

If acute nephritis does not cause death, ulcerative colitis with hemorrhages from the bowels may prove fatal, even after a lapse of several weeks.

The following treatment of mercuric chlorid poisoning is founded on the therapeutic results and laboratory findings of Lambert and Patterson[91] and of Fantus.[92] It is best immediately to examine the first material expelled from the stomach either by vomiting or by lavage, and to examine the urine for mercury, as the patient may not have taken mercuric chlorid, as he imagines. The patient is first given the whites of several eggs; the stomach is then washed out. He is then given a pint of egg albumin water, and the stomach again washed out.

According to Fantus, a tablet composed of sodium phosphite, 0.36 gm., and sodium acetate, 0.24 gm., should be dissolved and administered as soon as possible. If this drug cannot be obtained, the following solution should be substituted: sodium hypophosphite, 1 gm.; water, 10 c.c.; hydrogen peroxid solution, 5 c.c. If the amount of poison swallowed is known, ten times that amount of hypophosphite should be given. As this dosage of hypophosphite might be large, it should immediately be followed by lavage with warm water and a greatly diluted solution of the antidote. This may be followed by a safe dose of antidote, which may be repeated every eight hours for several days. A glass of egg albumin water should also be imbibed every alternate hour until several doses have been taken. Since it has been shown that milk is worthless as an antidote, there seems to be no necessity for using milk, which curdles and causes acid. As a demulcent, starch water, slippery elm or flaxseed tea may be used. A gram of sodium acetate, dissolved in sweetened water, should be taken every three hours, for a day or two, being omitted at such times as it comes in conflict with the antidote.

Lambert and Patterson's recommendation of rectal irrigation is important. They use the drop method of

91. Lambert, S. W., and Patterson, H. S.: Poisoning by Mercuric Chlorid and Its Treatment, Arch. Int. Med., November, 1915, p. 865.
92. Fantus, Bernard: Jour. Lab. and Clin. Med., 1916, **1**, 879.

rectal irrigation, with a solution of potassium acetate, 4 gm. (a dram) to the pint. It might be well to substitute sodium acetate for the potassium acetate, as in all poisoning and in all serious conditions, sodium salts are safer than potassium salts, as this solution is more or less rapidly absorbed and generally causes diuresis. The colon should also be thoroughly irrigated twice daily to remove whatever mercury may have been there deposited or which may have reached the colon through the bowels. As there occurs a resecretion of mercury into the stomach, it should be washed out twice daily during the first few days unless the patient vomits repeatedly when given warm water. Lambert and Patterson affirm that it is advisable to continue the colonic drip enteroclysis day and night, at short intervals, even though it is intensely disagreeable to the patient, until two examinations of the urine on successive days have given a negative test for mercury. They also assert that if excessive doses of mercuric chlorid have been absorbed, or if the kidneys were previously diseased, the treatment should continue for a longer period, as long as three weeks, if necessary.

If the kidneys have become seriously involved and suppression is present when a patient first comes under observation, the prognosis, although very serious, is not hopeless. Lambert and Patterson advise a daily sweat in a hot pack. This treatment, and also frequently repeated stomach washings, depends on the condition of the circulation — if the heart is weak and the circulation poor, the hot pack may be inadvisable.

(To be continued)

WAR WOUNDS AND SHOCK

The phenomena of surgical and traumatic shock are familiar to the practitioner. They are difficult to combat by any of the routine methods ordinarily applied in emergency practice. Laboratory investigators have long been busied with the study of experimentally produced shock. They are agreed that the cardinal symptom in this condition is a profound fall in blood pressure, as the result of which the individual suffering from shock is liable to "bleed to death into his own veins" unless some effective remedial procedure is instituted. When one approaches the question of the causes underlying the manifestations which characterize shock, there is no unanimity of opinion.

When the development of shock is carefully investigated, it is apparent that the fall of arterial pressure is caused by a diminution in the output of the heart. The fall is not due to abolition of the peripheral resistance in the arterial system. Henderson and others have pointed out that no inhibition or fatigue, or failure of any sort, occurs in the vasomotor nervous system. On the contrary, this mechanism is intensely active in an effort to compensate the lessened blood stream. Nor is the heart itself weakened. When the pressure in the venous system is observed, it becomes evident that the apparent cardiac failure is the result of diminution of the pressure and volume of the venous stream to the right heart. The etiologic sequence, in certain forms of shock at least, appears to be: venous stasis, cardiac failure, and fall of arterial pressure.

Traumatic shock has played a prominent part in the management of the wounded in the present European war as in previous conflicts. It is confidently stated by W. T. Porter that the number of wounded who suffer from low arterial pressure is large, much larger than most surgeons believe. Thousands have died from shock, and a remedy is urgently needed. Here we must turn to the beneficent results of experimentation on animals for our main hope of preventing or curing shock. Porter's observations, like those of others, have shown that when the diastolic pressure remains some time at from 45 to 50 mm. it will not recover without aid. Unless proper remedies are employed, the animal dies of shock. A diastolic pressure of 50 mm., therefore, is, as he expresses it, "critical." When the diastolic pressure falls to 50 mm., the blood accumulates in the abdomen. The animal then bleeds to death into its own portal vein. The remedies successful against this impending catastrophe are gravitation, and the raising of blood pressure by the injection of physiologic sodium chlorid solution or of epinephrin.

Commissioned by one of the American research foundations to investigate the problem of shock in freshly wounded soldiers at the front, Porter[1] of the Harvard Medical School determined to ascertain whether the phenomena of low blood pressure in wounded men are essentially those observed experimentally in laboratory animals. The question was naturally raised as to whether life in the trenches of itself lowers the arterial pressure or predisposes the soldier to a failure of the pressure after he is wounded. Porter's observations, conducted under exceptionally favorable conditions for ascertaining the effect of the severest types of mental and physical hardship in warfare, do not support the view that soldiers under fire suffer from low arterial pressure. He points out that a soldier soon gets accustomed to being under fire, and must not be judged from the standpoint of a civilian. Indeed, one would be led to expect perhaps that excitement would raise the blood pressure rather than lower it. A storm of large shells is not an indifferent matter, however, even when the emotions are restrained. The air pressure from their explosion produces violent reactions. Paralysis, low blood pressures, and other injuries may be thus produced in men who have no visible wound. The treatment of this condition does not differ from that following wounds, but the prognosis is said by Porter to be probably less favorable.

The newest observations of Porter on the wounded men at the front demonstrate that "there is no essential difference between the low pressure of men and that of other animals." The remedies successful against low pressure in animals are also successful against low pressure in human beings. The outcome of this conclusion has been a series of rules applicable in cases in which shock associated with a diastolic pressure of 60 mm. or less exists. To avert the accumulation of blood in the portal system, with consequent impairment of the activity of the heart and of the nutrition of the nerve cells, there are advised: (1) a special position of the wounded, so that the abdominal vessels shall be higher than the heart and brain; (2) heat; (3) intravenous injections of saline solution; (4) intravenous injections of epinephrin; (5) the transfusion of blood, in certain cases, and (6) the observation of the diastolic pressure every half hour as an index of the condition of the patient. The application of some of these procedures is reported to have produced gratifying results. The advantages which they afford obviously need not be restricted to the surgical exigencies of war.

1. Porter, W. T.: Shock at the Front, Boston Med. and Surg. Jour., 1916, **175**, 854.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street . . . Chicago, Ill.

Cable Address . . . . "Medic, Chicago"

Subscription price . . . . . Five dollars per annum in advance

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SATURDAY, MARCH 10, 1917

THE RELATION OF THE MOTHER TO SOME DIETARY FACTORS IN MILK

More than twenty-five years ago, Hirota observed an acute or subacute disease with a clinical picture of generalized edema, dyspnea, gastro-intestinal derangement, cardiac disturbance, and oliguria affecting infants who are nursing mothers suffering from beriberi. Although it was generally supposed before Hirota published his observations on these infants, in 1898, that beriberi did not affect nurslings, the existence of a characteristic infantile beriberi is now clearly recognized.[1] Like the comparable disease of adults, it is reported to be found in the East only rarely among the well-to-do native families who are able to purchase a varied and proper diet. The conclusion seems well founded today that infantile beriberi is due to a deficiency of some essential substance in the milk of the mother. Sufficient analyses of such milk have been made, however, in the case of mothers whose nursing infants have died from infantile beriberi, to show that the lacking factor in the diet cannot be a deficiency in proteins, inorganic salts or even fat; and as the infantile malady can be cured, precisely like the adult type, by administration of an extract of rice polishings, it seems logical to conclude in the light of present knowledge[2] that the two are caused by a deficiency of the same so-called vitamins.

The foregoing facts raise the question whether or not substances which are indispensable components of any adequate diet during growth can normally be formed by the maternal organism in connection with secretion. In many respects the mammary function appears to be more or less independent of the food supply to the lactating individual. Cows continue to produce milk of the usual composition, so far as the usual familiar nutrients are concerned, even when the fodder they receive is not adequate. When the constructive units of the ration do not meet the needs of the functioning mammary cells, they draw on the rest of the body so that the milk proteins, if they are produced at all, are characteristic. So long as the body stores can be drawn on, the secretion of an apparently normal milk continues even when the animal is losing body weight and becomes depleted in its protein reserve.[3] These facts correspond, as has been pointed out,[4] with the observation of Decaisne[5] during the siege of Paris that, even during fasting or partial fasting, vigorous young women were able to keep up a flow of milk sufficient to induce some growth in their infants.

Can the unidentified dietary factors, popularly called vitamins, be similarly furnished by the maternal organism even when they are wanting in the diet of the lactating mother? The prevalence of infantile beriberi among children whose mothers' diet is insufficient to prevent this disease speaks against the probability of a ready maternal synthesis of vitamins. McCollum and his collaborators,[4] who have raised this question anew, point to the remaining possibility that the diet of these mothers, which is restricted as to source and variety, and is of poor quality, may be inadequate with respect to the preventive substance itself and also as to its content of a possible precursor from which it might be formed through the peculiar property of a special organ, in a manner analogous to the formation of the various hormones of internal origin.

The antineuritic vitamin which prevents the occurrence of beriberi is not the only unidentified dietary factor essential for adequate growth. Another of these apparently indispensable food hormones is found in some of the natural fats, notably milk fat and egg yolk fat, the need of which has been so clearly emphasized by McCollum, Osborne and Mendel. McCollum prefers to avoid implications of the as yet unknown chemical nature of these various determinants of growth by speaking of the fat-soluble A and water-soluble B. Both of these are represented in milk. The latter seems to be responsible for its antineuritic properties; both must be furnished if growth is to proceed normally.

At the Wisconsin Experiment Station in Madison, experiments have been undertaken to ascertain the ability of normal female animals to suckle their young when confined to a diet which is known to be adequate for growth when satisfactory amounts of the unidentified A and B are added, and inadequate for growth when either of these factors is omitted. The paucity of such a diet in possible precursors is hardly to be expected, and the results should enable us to decide whether or not these two essential substances pass into the milk only when they are furnished in the diet.[4] From the careful studies reported it seems necessary to conclude, with the investigators, that the two constituents of the diet just discussed pass into the milk

1. Vedder, E. B.: Beriberi, New York, 1913, Chapter XII.
2. Vedder, E. B.: The Relation of Diet to Beriberi and the Present Status of our Knowledge of the Vitamins, The Journal A. M. A., Nov. 18, 1916, p. 1494.
3. The Relation of Proteins to Milk Production, editorial, The Journal A. M. A., Nov. 4, 1916, p. 1374; Some Factors in Milk Production, Feb. 3, 1917, p. 374.
4. McCollum, E. V.: Simonds, N., and Pitz, W.: The Relation of the Unidentified Dietary Factors, the Fat-Soluble A, and Water-Soluble B, of the Diet to the Growth-Promoting Properties of Milk, Jour. Biol. Chem., 1916, **27**, 33.
5. Decaisne, E.: Gaz. méd. de Paris, 1871, p. 317.

only as they are present in the diet of the mother, and that milks vary in their growth-promoting power when the diets of the lactating animals differ widely in their satisfactoriness for the growth of young. It seems further justifiable to conclude that the chemical natures of the fat-soluble A and the water-soluble B, whether these represent in each case a single substance or a group of substances, are of such character that they cannot be formed within the animal body from any of the cleavage products of proteins.

More than ever before the progress of scientific investigation points to the importance and, indeed, the absolute necessity, of a suitable dietary for the nursing mother. The greatly superior chance of the naturally fed infant to survive in contrast with its artificially fed brother is everywhere admitted. The advisability of breast feeding being thus assumed, it becomes necessary to fortify the woman of today against the possible detriment which changes in the food customs and the necessities of the times altering the previously usual dietary may bring with them in respect to the subtle qualities of human milk. The experience of the Filipino mother who has subsisted on polished rice should carry its warning to those responsible for the nutrition of the mothers of our own country. Unnatural conditions of life must not be allowed to produce detrimental effects which can be discovered only in the subsequent nutrition of the young.

THE NECROPSY SITUATION IN THE UNITED STATES

Every thoughtful physician recognizes the importance of necropsies for the progress of medicine. The necropsy serves as a mode of instruction: it helps to eliminate error, and enables a rational institution of treatment when subsequent circumstances call for them. The education of the medical profession by accurate postmortem diagnoses is a veritable safeguard for the public welfare. This is axiomatic. Again, the successful institution of a greater number of necropsy records will serve to correct the inaccuracies of present-day vital statistics. It is admittedly a drawback to the intelligent conservation of our vital resources to find, as every student of modern sanitation promptly does, that it is impossible at present to have the exact sanitary or insanitary index to conditions in many parts of the country because of the blatant inadequacies of the death records.

The knowledge gained through the postmortem examinations of the past is permanent; but there is still abundant opportunity for such anatomic findings to help in the solution of the problems arising almost every day in relation to the obscure symptoms of disease. Thus M. C. Winternitz[1] reminds us that the most accurate knowledge we have of the scourge of the present day, infantile paralysis, is its pathologic anatomy. Without the necropsy, the diagnosis even of this disease often cannot be attained. From the anatomic picture the clinical manifestations of the disease are readily understood, and by this means its successful transmission to animals has been verified. Its histology, comparable to that of other infectious diseases, will aid in establishing its etiology, and ultimately may help in unraveling its portal of entry and dissemination in the body. Physicians who have been taught to think anatomically must be given an opportunity to enlarge their experience. It is not sufficient, says Winternitz, that postmortems are carried on in large numbers in Europe—they must be performed everywhere if the health of the public is to be safeguarded.

The unsatisfactory situation in the United States was particularly emphasized by a report of the New York Academy of Medicine published four years ago.[2] It developed that the ratio of necropsies to deaths ranged above 25 per cent. in only four of seventeen large hospitals in this country, in contrast with the decidedly higher postmortem statistics in European public hospitals of a similar status. The evidence that some improvement is beginning to manifest itself here was reviewed a few months ago in THE JOURNAL.[3] A new compilation has been attempted by Winternitz[1] through a questionnaire sent to a number of representative American hospitals for records to include the year 1916. In nineteen of the twenty-one hospitals included in the investigation there has been no notable change in either the total number or percentage of necropsies during the past six years. If, however, the ratio of necropsies to the number of deaths for any year—say, 1915—is compared with similar data from the report of the New York Academy of Medicine, the result is surprising, especially if the twenty-one hospitals included in this investigation are supplemented by the Robert Bent Brigham Hospital, Boston, the Johns Hopkins Hospital, and city hospitals, Bay View, Baltimore, for the same year. Winternitz says that while there are still a large number of hospitals with a small percentage of necropsies, nevertheless it is evident that there is an increasing group of institutions in which the percentage of necropsies is high. Perhaps the selection of hospitals was fortuitous, and probably further investigation of many more institutions would yield a still different result.

Undoubtedly the problem of presenting a convincing argument in seeking permission for conducting necropsies is worthy of careful study. The "stock arguments" as they appeal to the average hospital superintendent have been thus epitomized: the importance of the necropsy in determining the true cause of death;

1. Autopsies—Their Value, Methods of Obtaining, and Protection of the Hospital, Mod. Hosp., 1917, **8**, 36.

2. Report on Post-Mortem Examinations in the United States by Public Health, Hospital and Budget Committee of the New York Academy of Medicine, THE JOURNAL A. M. A., June 7, 1913, p. 1784.

3. Recent Necropsy Records in the United States, editorial, THE JOURNAL A. M. A., May 27, 1916, p. 1706.

the benefit derived from this knowledge by the family, by the hospital, by the science of medicine and humanity, and the aid of the exact cause of death as revealed by the necropsy in the settlement of insurance claims.

THE VENEREAL DISEASE PROBLEM—VI

The Present Attacks on the Problem

In recent numbers of THE JOURNAL[1] we have reviewed briefly some of the important efforts which are now being made to control the venereal diseases. The English and German efforts are most important, because of their extent and because of the expert knowledge behind them. That of Western Australia, while affecting only a sparsely populated province, is of great interest, because here is the first legal effort in an Anglo-Saxon community which is thorough and complete in its provisions.

All agree on the sanitary importance of the provision by the state of universal opportunity for prompt diagnosis and treatment. This is the sanitary measure on which reliance is placed in attacking the diseases. It is recognized that legal provisions, to be completely effective, should compel patients, if necessary, to continue treatment until cured. England and Germany, except in districts under military control, have not yet seen their way to enforce this requirement. Western Australia has taken the signal step of providing this requirement under stringent penalties. In Germany this step has strong advocates.

The requirement of notification of venereal diseases is not included among the measures which have been put into legal force. The British Royal Commission on Venereal Diseases believed that notification is a step which may perhaps come later, but was opposed to it in the present state of opinion, and the English Local Government Board in putting into effect its vast scheme for taking care of the venereal diseases made no provision for notification. In Germany no comprehensive scheme of notification is provided, and there is strong opposition to it. Even Western Australia with its thorough measure does not require complete notification, so long as patients live up to the provisions of the law.

In Germany there is an extensive propaganda to extend knowledge of the means and the usefulness of personal prophylaxis against venereal diseases. The English-speaking countries hesitate at this. Nowhere is any confidence placed in the regulation of prostitution and the inspection of prostitutes as a sanitary measure of importance against the venereal diseases. Competent opinion evidently holds that we have one very effective measure which can be applied in Anglo-Saxon communities against the venereal diseases, and that is the therapeutic attack on them. The second measure on which reliance is placed is personal prophylaxis. In these two measures lie the prospects, and apparently the only prospects, of controlling the venereal diseases.

There is a good omen in the widespread agitation which now exists for the control of the venereal diseases. The interest in the subject has permeated the general population to the point at which those who are competent to lead in this field can rely on a large measure of popular support. With increasing general intelligence on the subject there is little doubt that the time is not far distant when effective measures for attacking these diseases will be enacted in many intelligent states and receive the support of popular sentiment. When that time arrives we may look with considerable assurance to a successful sanitary attack on these diseases — a success which will be the more notable because it has not been attained in any efforts which man has yet made. It need hardly be said that the menace of the venereal diseases justifies beyond all measure the extensive efforts by the state which its control would require; for the venereal diseases rank with tuberculosis and malaria as the great chronic plagues of man.

1. The Venereal Disease Problem, I, editorial, THE JOURNAL A. M. A., Feb. 3, 1917, p. 375; II, Recommendations of the British Royal Commission on Venereal Diseases, Feb. 10, 1917, p. 463; III, The English Venereal Disease Act, Feb. 17, 1917, p. 550; IV, Western Australia's Effort to Control the Venereal Diseases, Feb. 24, 1917, p. 639; V, The Problem in Germany, March 3, 1917, p. 715.

WHAT CONDITIONS DETERMINE THE EXCRETION OF CREATIN?

Although creatin, one of the most characteristic nitrogenous components of muscle, is regularly found in the urine of children, it is rarely found in that of adults except under unusual circumstances. Creatin appears along with creatinin during inanition; it has been observed in carbohydrate hunger and likewise in diabetes, the pathologic experiment in specific sugar starvation so frequently provided by Nature. Mendel and Rose, as well as many others,[1] have accordingly related creatinuria, in adults at least, with some perversion of carbohydrate metabolism. The probability of such relationship has been fortified by the fact that known instances of the appearance of creatin in the urine have readily been checked by administration of carbohydrate. Underhill[2] has recently pointed out, however, that deficiency of available carbohydrate in the body usually involves an accompanying disturbance in the acid-base equilibrium, an excessive production of acid accompanied by a withdrawal of base from the body. This phenomenon is sometimes, though not always attended with a ketonuria and an acidosis caused by ketogenic substances. As a matter of fact, nearly every type of condition hitherto recognized in

1. For the recent literature concerning creatin see Mendel, L. B., and Rose, W. C.: Jour. Biol. Chem., 1911-1912, **10**, 213. Riesser, O.: Ztschr. f. physiol. Chem., 1913, **86**, 415. Myers, V. C., and Fine, M. S.: Jour. Biol. Chem., 1913, **14**, 9; 1913, **15**, 283, 285; 1913-1914, **16**, 169; 1915, **21**, 377, 383, 389. Benedict, S. R., and Osterberg, E.: Ibid., 1914, **18**, 195.

2. Underhill, F. P.: Studies in Creatine Metabolism, I, Possible Interrelations between Acidosis and Creatine Elimination, Jour. Biol. Chem., 1916, **27**, 127.

which there is creatin in the urine is accompanied by some form of acidosis.

In experiments on rabbits, which ordinarily excrete an alkaline urine, Underhill found that, on a diet of oats and corn containing an adequate supply of carbohydrate, creatin promptly appears in the urine. A marked condition of acidosis, as measured by the hydrogen ion concentration of the urine, is always associated with this phenomenon. Oats and corn are pronounced acid-producing foods. On the other hand, if a base-producing food, such as carrots, is fed to rabbits with creatinuria, this symptom rapidly disappears as the urine becomes alkaline. The protein per se is without special significance in the phenomenon under discussion; for on a diet consisting of oats, corn and carrots, creatin fails to appear in the urine, and the reaction of the latter remains alkaline. Equally significant is the further fact that the ingestion of hydrochloric acid with the mixed diet causes the appearance in the urine of significant quantities of creatin. Simultaneously the hydrogen ion concentration of the urine is markedly increased.

Underhill's conclusion that there is an interrelationship between acidosis, in the sense of base depletion, and the elimination of creatin by the organism, so that the urinary output of creatin may prove to be an index of the disturbance in acid-base equilibrium, has been substantiated by him in other ways.[3] Administration of alkali during the earlier days of starvation may greatly diminish or completely abolish the creatinuria of that condition; though later in the period of inanition, introduction of alkali may not show as marked an influence on the existing creatinuria.

A close relationship between the blood sugar content and the acid-base equilibrium in the body has also been demonstrated. Hypoglycemia and alkalosis often appear to go together. In some of the experimental glycosurias, on the other hand, the administration of large amounts of alkali has been without appreciable influence on the elimination of creatin. Although creatin may find its way into the urine, of the rabbit at least, under circumstances which exclude the possibility of carbohydrate deficiency, alkali depletion cannot be the sole stimulus for the production of creatin.

One is thus forced, with Underhill, to the conclusion that more than a single factor may govern the mechanism of the reactions leading to creatinuria. He is inclined to believe that the urinary elimination of creatin may be induced by at least two different sets of conditions: (1) Creatin may appear in the urine in states of acidosis in which carbohydrate deficiency is not involved, and (2) creatinuria may be present during carbohydrate deficiency even in the absence of acidosis. In view of the present interest in the creatin-creatinin problems, the newest hypotheses which carry some experimental support deserve critical consideration.

3. Underhill, F. P., and Baumann, E. J.: Studies in Creatine Metabolism, III, The Influence of Alkali upon the Creatinuria of Phlorhizin Glycosuria, Jour. Biol. Chem., 1916, **27**, 147; IV, The Relationship of Creatinuria to Carbohydrate Metabolism and Acidosis, ibid., p. 151. Underhill, F. P., and Bogert, L. J.: Alterations in the Output of Certain Urinary Constituents as Determined by Changes in the Character of the Diet, ibid., p. 161.

Current Comment

ANOTHER SHORTAGE OF SALVARSAN

The indications are that the supply of salvarsan and neosalvarsan in this country has again reached the point of exhaustion. To the medical profession, who know the unfortunate results of a shortage of salvarsan on the health of the present and future generations, the situation is an exasperating one. Is there no remedy? Is our government impotent to relieve the condition? Congress made our patent law; it certainly has the power to suspend the patent on any preparation that the patentee is unable to, or does not, supply when such suspension is in the interest of public health. It is well known that at the time of the previous shortage the Dermatologic Research Laboratory of Philadelphia manufactured the product under the name of arsenobenzol.[1] It is presumed — at least hoped — that in the present shortage the laboratory will again manufacture the product. It should meet with no legal difficulty, as the agents for the salvarsan manufacturers have intimated that they would not object to such supply of the product at times when they themselves were not able to furnish it. But such a relief for the situation is not a permanent relief — it is a makeshift. Monopolies on medicaments such as diphtheria antitoxin, salvarsan and the like are against public interest. The United States has granted process and product patents on salvarsan: even if any one in this country produced a salvarsan product or derivative which would be more curative and more valuable — on account of being less toxic, for instance — the patentees could effectually prevent its manufacture and sale. Again it should be emphasized that the fact that a most important drug is unavailable is the result of an act of Congress, and Congress has the power to modify its action so that the remedy may be made available.

THE BLOOD PRESSURE OF FILIPINOS

If the statistics of measurements relating to blood pressure and the kinetic energy of the circulating medium are to become of use to clinicians and to life or health insurance companies as indexes of normal or abnormal functioning on the part of the organism, they must not only be based on accuracy but must also take into consideration such factors as race or climatic environment which might produce variations in physiologic performance. There is an interest, therefore, in the recent studies on the blood pressure factors of the Filipinos by I. Concepción and E. Bulatao[2] of the College of Medicine in the University of the Philippines. Although the systolic pressures had

1. A Canadian product, diarsenol, was also, and for that matter, is still available.

2. Blood Pressure Picture of the Filipinos, Philippine Jour. Sc., Sec. B., Trop. Med., 1916, **11**, 135.

been measured by previous investigators[3] in our insular possessions in the Far East, the other equally essential factors of diastolic pressure and pulse pressure had not been determined for any large number of Filipinos. Examined with the Erlanger sphygmomanometer, 717 persons with an average age of 28.5 years showed average systolic pressures of 115.5 mm. of mercury in males and 116 in females, average diastolic pressures of 79 and 83 mm., and average pulse pressures of 36 and 33 mm. There is a general rise of all these factors with age; but the Filipino investigators assert on the basis of their observations that hypertension is not a necessary accompaniment of old age. Average data are always liable to harbor unsuspected yet significant variables. For this reason it may be noted that in 76 per cent. of the Filipino subjects carefully examined the systolic pressure ranged from 100 to 140 mm. The statistics, when compared at different ranges of age, are much lower than those reported for Europeans or Americans living in temperate climates, but appear to correspond with what Americans living in the tropics exhibit. The pulse rate in the tropics — still a debated question — was observed in the Filipino to average a few beats above the usual standard of 72 a minute. An acceptable explanation of the lower blood pressure found in the tropics is not forthcoming at present. It has been ascribed to a dilatation of the peripheral blood vessels as well as increased elasticity of the vessel walls. Another view has associated it with an assumed low peripheral resistance attributable to the increased secretory function of the sweat glands, or with the possibility of splanchnic influences originating in the "prevalent sensation of abdominal vacuity" and the frequency of gastro-intestinal disturbances. It would not be without interest to ascertain a more defensible cause of the phenomenon in question, now that the fact of lower pressures in the Filipinos has become established by more abundant statistics.

3. Musgrave and Sison: Philippine Jour. Sc., B., 1910, **5**, 313. Chamberlain, W. P.: Ibid., 1911, **6**, 467.

"BONE DRY" BUT STILL MOIST

News items appeared in the Eastern papers recently of which the following, from the Baltimore *Sun* of February 24 is a specimen:

> "DANVILLE, VA., Feb. 23.—So great has become the demand here for a certain proprietary medicine which contains 25 per cent. alcohol, that the city Police Department has laid the condition before the Prohibition Commissioner. An investigation has just led to the discovery that during Saturday and Sunday more than 700 bottles were sold in Danville and Schoolfield.
>
> "The police had to deal with more drunkards this week than during the entire month of January and each man admitted that he became intoxicated on the medicine."

THE JOURNAL telegraphed to the chief of police of Danville, Va., asking for the name of the proprietary medicine containing 25 per cent. alcohol which was reported to be responsible for several cases of intoxication. The laconic but all-sufficient reply from the Danville chief of police was: "Name medicine Hostetter's Bitters." It is surely more than a coincidence that the alcohol-containing "patent medicines" seem to be most widely advertised and most popular in those parts of the country which are commonly designated as "dry." It is a pity that there are no statistics to show the change in the volume of sales of "patent medicine" "tonics" that follow the enactment of prohibition laws. Far be it from THE JOURNAL to deprecate the spread of prohibition. So long, however, as individuals can sell, unrestrictedly, preparations containing small amounts of plant extractives in alcohol one-half the strength of raw whisky under the guise of "tonics," prohibition will not have the terrors for certain persons it might otherwise possess. In view of the new "bone dry" law recently enacted it would seem that now is a good time for the Internal Revenue Department to turn its attention to a class of remedies that might bring to the government considerable revenue — the alcoholic "patent medicines."

INANITION, KETONURIA AND ACIDOSIS IN CHILDHOOD

It has been customary among clinicians to associate certain symptoms, including nausea, vomiting, flushing of the cheeks, rise of temperature and hyperpnea, which are observed during childhood, with acidosis. A notable urinary output of acetone and related compounds has usually been selected as a chemical index of this condition. It would be more appropriate to speak of a ketosis as underlying the features referred to, for acidosis and ketonuria are no longer to be regarded as synonymous terms. Ketonuria represents a form of acidosis distinguished by the excessive formation of so-called acetone bodies — acetone, diacetic acid and beta-hydroxybutyric acid. A faulty metabolism of fats may underlie the pathology of this phenomenon. It has long been known that acetone bodies frequently appear in the urine of fasting persons, as well as in the urine of those with certain febrile and toxic conditions, particularly diabetes. To what extent, then, does the acetone body acidosis of childhood represent an inanition factor? Veeder and Johnston[1] have lately called attention to the lack of information on this subject, which is of particular interest to the pediatrician. As they point out, despite the infrequency of diabetes at this period, acetonuria is common in childhood, and is often associated with narcosis, cyclic vomiting and many febrile and toxic conditions. In all of these clinical conditions there is the possibility that inanition may be a factor to a greater or less degree. But the actual rôle played by inanition is uncertain, for persistent fasting in some cases of diabetes seems to decrease the degree of acidosis. Veeder and Johnston have accordingly observed children before, during and after a twenty-four or forty-eight hour period of inanition. They found under the circumstances that the total quantity of acetone bodies in the urine during short inanition periods varies directly with the duration of the inanition. They also found, as did previous observers, that the amount of beta-hydroxybutyric acid

1. Veeder, B. S., and Johnston, M. R.: The Factor of Inanition in the Development of Acetonuria in Children, Am. Jour. Dis. Child., January, 1917, p. 89.

(in terms of acetone) eliminated was as a rule from two to four times as great as the quantity of combined acetone and diacetic acid. In extreme instances there was a slight actual increase or percentage increase in the ammonia elimination on the first day of inanition; but this was rare. On the second day of inanition, however, a marked increase took place. Although the children were closely watched for the development of clinical symptoms, particularly those which are so frequently regarded as signs of an acetone body acidosis in childhood, not one seemed to be affected in any way by the inanition. The St. Louis pediatricians, therefore, are unwilling to believe that the formation of acetone bodies per se, at least in the amounts produced by inanition, can be the fundamental cause of the symptoms in children so often regarded as due to acidosis.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

COLORADO

Home for Drug Users Approved.—A bill to establish a state home for drug users passed its second reading in the senate, February 15.

New Officers.—The Denver County Medical Society: president, Dr. Samuel B. Childs; vice president, Dr. Charles D. Spivak, and secretary, Dr. R. Gilchrist Smith, all of Denver.

Typhus Fever.—Typhus fever has been discovered at La Junta which is believed to have been brought into the state by Mexican laborers of the Santa Fe System. The patients have been isolated and are well on the road to recovery.

To Bar Physicians with Tuberculosis.—A bill has been introduced in the house of representatives by Representative Cole which provides that every practicing physician in the state shall submit to physical examination within a year after the passage of a bill, and that if found to be afflicted with any contagious disease, he shall be barred from practicing until examination proves that he is free from it. The bill also provides that the board of examiners make examination of physicians in the state every two years.

Personal.—Dr. Ward T. Burdick, city pathologist of Denver, has resigned to take effect, February 15.——Dr. Frank G. McKlveen has been elected president, Dr. Frank M. McCartney, vice president, and Dr. William F. Matson, secretary, of the staff of St. Anthony's Hospital, Denver.——Dr. Will D. Runyon, Colorado Springs, has been appointed medical director of the Woodbury County Tuberculosis Sanatorium, Sioux City, Iowa.——Dr. Erlo E. Kennedy, Basalt, has been elected chief clerk of the house of representatives.

FLORIDA

Eclectic Board Declared Vacant.—Reports state that on March 2 Governor Catts of Florida declared vacant the State Board of Eclectic Medical Examiners. The grounds stated in the reports are that the board was giving fake doctors diplomas and licenses from extinct colleges for $300 to $500. It was also stated that several deaths had occurred from malpractice on the part of the men so licensed. The men reported as members of the eclectic board were Drs. George L. Dickerson, Jacksonville; Frank E. Gavlas, Lake Worth, and V. K. Jindra, Tampa. It is stated that as a result of a suit brought against him Dr. Jindra has become a fugitive from justice.

ILLINOIS

Eugenic Marriage Bill Lost.—By an almost unanimous vote the senate on February 28 struck out the enacting clause of the bill backed by the Eugenic Education Society and introduced by Senator Austin of Oak Park.

Personal.—Dr. Rufus H. Main, Barry, was kicked by a horse, February 24, and seriously injured.——Dr. Frank W. Palmer, Chatsworth, sustained a fracture of a rib and concussion of the brain by the overturning of his automobile, February 22.

Consolidation Bill Passes.—Governor Lowden's consolidation bill, reorganizing the administrative department of the state government, has passed both houses of the legislature and become a law. The conference report was adopted unanimously by the senate and by a vote of 131 to 2 in the house. The bill abolishes or combines about 130 boards, bureaus and other separate governing agencies into nine departments, each under a director. The directors of the boards of finance, trade and commerce, and public welfare are to receive an annual salary of $7,000; the directors of the departments of agriculture and public health, a salary of $6,000, and the directors of the departments of education and registration, labor, and mines and minerals, $5,000 each. From a public health standpoint, the most radical changes are the creation of a department of health with a commissioner in place of the state board of health, and the consolidation of the work of examining and registering physicians, dentists, pharmacists, nurses, osteopaths, optometrists, drugless healers and all other registered professions under a department of education and registration, which will be conducted as a part of the educational machinery of the state.

Chicago

The Scarlet Fever Situation.—March 5, there were 1,900 cases of scarlet fever in Chicago, of which 118 were reported in the last two days of the week.

Vaughan in Chicago.—Dr. Victor C. Vaughan, dean of the University of Michigan, lectured before the Sunday Evening Fellowship Club, March 4, on "The Religion of a Man of Science."

Examination of Postoffice Employees.—The examination of the 7,400 postoffice employees for tuberculosis, made under the auspices of the Municipal Tuberculosis Sanatorium, was commenced, March 4.

Merger of Contagious Disease Hospital.—Health Commissioner Robertson has appointed a committee consisting of Mrs. William R. Cubbins of the Chicago Women's Club, Drs. William A. Evans, William L. Noble, Albert J. Ochsner, A. Augustus O'Neill and Daniel A. K. Steele to investigate the City Contagious Disease Hospital and to make recommendations for its betterment.

Psychopathic Institute for Criminal Court.—The criminal court is to have a psychopathic institute for which aid will be obtained from the Rockefeller Foundation. Judge Hugo Pam has been made representative of the criminal court judges on the committee to direct the work of the institution. The institution will be an extension of the Juvenile Psychopathic Institute, and will be supervised by Dr. Herman Adler.

Lectures on Tuberculosis.—A course of lectures on tuberculosis to be given at the City Club on the remaining Thursdays of March will be as follows:

March 15: "What May Lead the Layman to Suspect Tuberculosis—the Return of the Sanatorium Patient—How to Deal with the Tuberculosis Carrier," Dr. Charles Segal.

March 23: "Crippled Children and Tuberculosis," Dr. Edwin W. Ryerson.

March 29: "The Results of the Tuberculosis Survey," Dr. Clarence L. Wheaton. "Incidental Problems of the Survey," Dr. John Ritter.

Personal.—Dr. Julius Grinker has been appointed on the neurologic staff of Mercy Hospital.——Mrs. Albert H. Hoy, wife of Dr. Albert H. Hoy, formerly of Chicago, was drowned after the torpedoing of the Cunard Liner *Laconia*, recently.——Dr. Frank Billings has been compelled to resign as head of Base Hospital Unit No. 13, on account of ill health, and has recommended Dr. Arthur D. Bevan in his stead. Dr. Billings has gone to Pasadena, Calif., for two months, following his recovery from pneumonia.——Dr. Will P. Walter, Chicago and Evanston, was seriously injured in a collision between automobiles, March 4.——Lieut.-Col. Jacob Frank was reelected president of the Army and Navy Club of Chicago at its annual meeting, February 28.——Dr. Robert A. Smith has been elected exalted ruler of Chicago Lodge, B. P. O. Elks.——Dr. J. Gordon Wilson has returned to Chicago after several months' army medical service in England and France. Dr. Wilson has been especially engaged in investigating the effects of high explosives and concussion on the ear.

INDIANA

Personal.—Dr. William F. King, Indianapolis, assistant secretary of the state board of health, has been elected president of the Indiana Sanitary and Water Supply Association.

Sanitary Survey Complete.—Surg. Carroll Fox, U. S. P. H. S., has completed his sanitary survey of South Bend, and has made recommendation to the council for the betterment of conditions.

New Sanatorium.—An association was organized in Auburn recently to secure a tuberculosis sanatorium for the counties of Steuben, Noble, DeKalb and Lagrange. Dr. Thomas J. Creel, Angola, and Dr. John W. Morr, Albion, were elected second and fourth vice presidents.

Bill for New Medical School Building.—Representative Gentry has introduced a bill appropriating $300,000 for a new building for the Indiana University, School of Medicine, Indianapolis.——The students of the state university have presented to Governor James P. Goodrich an expression of their appreciation of his demand for an adequate equipment for the Indiana University School of Medicine.

MARYLAND

Personal.—Dr. John D. Blake, commissioner of health of Baltimore, has returned to his desk after an absence of two months, due to illness.

Campaign to Raise Funds for Maryland General Hospital.—The ten-day campaign to raise $150,000 for the benefit of the Maryland General Hospital resulted in securing $160,396. Other promised contributions are expected to bring the amount to $165,000.

Medical Preparedness in Baltimore.—The personnel of a base hospital has been enrolled at Johns Hopkins Hospital. ——The Medical Reserve Corps of the Army has thirty-eight members in Baltimore. The secretary of the local organization is Lieut. Edgar Smith Linthicum.

MINNESOTA

Infantile Paralysis.—The first case of infantile paralysis for the season was reported in St. Paul, February 22.

Hospital Notes.—The county commissioners of Itaska have decided to build a county hospital at Grand Rapids on a site donated by the village.

Quarantine Ineffective.—Dr. Henry M. Bracken, St. Paul, secretary to the state board of health, in an address, February 24, at Montevidio, declared that quarantines were things of the past and were of no value and that schools should not be closed when epidemics visit communities.

Whole Time Health Officer Wanted.—The St. Louis County Medical Association favors a whole time public health service and to this end has asked applicants for the position of health commissioner to put themselves on record as favoring the health commissioner giving up his entire time to the public health service.

Smallpox in the State.—There were under quarantine in Minneapolis, February 28, fifty-four cases of smallpox, the largest number recorded in any one time during the last three years.——On account of the outbreak of smallpox in the girls' dormitory of the State Normal School in St. Cloud, 600 students have been vaccinated and the school has been allowed to reopen.

Personal.—The resignation of Major Willmar C. Rutherford, M. C., Minn. N. G., St. Paul, was accepted by the president, February 13.——Dr. Charles F. Brigham, St. Cloud, fractured his arm in jumping from his cutter when his horse ran away, February 24.——Dr. Simeon O. Francis, White Bear, has been stricken with cerebral hemorrhage, at St. Augustine, Fla.

NEW YORK

Oppose Health Insurance.—At a meeting of the legislative committee of the Social Insurance Department of the National Civic Federation, held in Albany, March 7, steps were taken to oppose the Mills bill for compulsory health insurance. The committee made sixteen objections to the bill, including statements that it would confer no benefits on employees or employers, but would create needless economic burdens on all concerned.

Lectures on Public Health and Preventive Medicine.—The Albany Medical College offers a course of lectures in public health and preventive medicine in conjunction with a course in preventive medicine which for the first time is being given to second-year medical students. They are held Wednesday afternoons at 5 o'clock at the State Education Building, and are open to the public without charge. They are given under the direction of Dr. Augustus B. Wadsworth, director of the laboratories of the state department of health. Subjects during March are as follows:

March 14: The Administration of Antitoxin, Dr. William H. Park, Director Research Laboratory Department of Health, New York.

March 21: The Influence of Defect and Sexual Disease upon the Public Welfare, Mr. Robert W. Hill, Superintendent, State and Alien Poor, New York State Board of Charities.

March 28: Health Administration, Nuisances, and Communicable Diseases, Dr. Arthur Sautter, Health Officer of Albany.

Bill to Control Drug Habit.—A bill embodying the following provisions is now before the legislature:

(1) Establishment by the state of a dispensary system whereby the confirmed addict may get his drug pending treatment and cure. (2) A state check on narcotic drugs ordered by druggists and doctors by means of a triplicate order blank, one copy of which shall be filed with the state board of health. (3) Registration of addicts with the state board of health, to the end that statistics on addiction may be gathered by the state and state aid offered. (4) Amendment of the existing law permitting magistrates to commit addicts to the care of a physician as well as to a state institution. (5) Provision against the sale of unmixed narcotic drugs under guise of compounded medicine. (6) Amendment of the present law making illegal or forged use of physician's name or official blanks a felony. (7) Authorization of appointment of inspectors by the state board of health to enforce the statute.

New York City

Military Surgery at Columbia University.—The College of Physicians and Surgeons has asked the War Department for an instructor in military surgery.

Harvey Society Lectures.—The eighth lecture in the twelfth course of the Harvey Society Lectures at the New York Academy of Medicine will be given March 17 by Prof. Francis W. Peabody of Harvard University on "Cardiac Dyspnea."

Make Roster of Doctors and Nurses.—Former health commissioner Sigismund S. Goldwater, with the approval of the mayor and the cooperation of the heads of the city departments, is taking a census of the hospital facilities, physicians and nurses of New York City in preparation for any eventualities that may result from international complications.

More Persons Killed in City Streets.—The report of the National Highways Protective Society for February shows that forty-four persons lost their lives in this city during February, thirty of these deaths being caused by automobiles. This is an increase of sixteen deaths from automobiles over the same month of last year. In the remainder of the state twenty-three persons were killed, as compared with fifteen for the corresponding month of last year.

Campaign for Medical Examinations.—The committee on the prevention of tuberculosis of the Charity Organization Society has initiated a city-wide educational campaign for medical examinations. They have distributed 100,000 circulars headed "The Day Before You Die," setting forth the advantages of medical examinations and stating that out of thousands of men and women examined 70 per cent. had defects the correction of which would add materially to their length of life. Preparatory to initiating this campaign, the committee investigated eighty-four firms employing 325,000 persons.

Public Health Activities of the Academy of Medicine.—The public health committee of the New York Academy of Medicine has undertaken an investigation of the medical service of the police department at the request of the police commissioner and under the direction of Dr. W. Gilman Thompson. The committee has also made a study of the district plan of health administration such as is in operation in the Borough of Queens, as well as a study of the laws aimed at suppression of drug habits and the illicit sale of narcotic drugs, which have apparently failed to bring about any radical change in the situation. The committee is also securing information as to the work on poliomyelitis being done by various official and unofficial bodies.

Correction.—In THE JOURNAL, Feb. 10, 1917, p. 470, in a news item headed "Council of State Medical Society Reproved" reference was made to a resolution adopted by the Medical Society of the County of New York, and it was stated: "It was acknowledged that the council of the state society had not transcended its powers in taking this action."

We are now informed by the secretary of this organization of the exact wording of this resolution, which was:

"*Therefore, Be it Resolved:* That The Medical Society of the County of New York disapprove and condemn this hasty, inconsiderate, extra-legal if not illegal indorsement by the Council of The Medical Society of the State of New York of a measure not fully approved by the body of the profession either in principle or in policy, while it is still under discussion by those most vitally affected by its provisions."

Personal.—Dr. W. Sohier Bryant sailed for England on the *Orduna*, February 24, to give his services to the cause of the Entente Allies.——Dr. Julien A. Gehrung, who sailed for France, February 13, has arrived in Europe and will work in Paris hospitals.——Dr. Stephen Smith, dean of surgeons of New York, celebrated his ninety-fourth birthday, February 19.——Dr. Joseph A. Blake has accepted the invitation of the French government to become head of the hospital built and conducted by Dr. Eugene Doyen, who died about two months ago. The hospital will be conducted as a war hospital under the American Red Cross.——Dr. Kenneth Taylor, formerly of New York, will have charge of the Robert Walton Goelet Research Laboratories which have been incorporated as a part of the new institution.——Dr. J. Bentley Squier has been appointed professor of urology at the College of Physicians and Surgeons, Columbia University, to succeed Prof. James R. Hayden, resigned.——Dr. Virgil P. Gibney has resigned his professorship of orthopedic surgery at the College of Physicians and Surgeons.——Dr. Emil Mayer has been appointed consulting laryngologist to Mount Sinai Hospital.

PENNSYLVANIA

Larger Library.—John Welles Hollenbach, Wilkesbarre, has presented the Luzerne County Medical Society with $10,000 for the purchase of books.

Personal.—Dr. Henry C. Allen, Schwenkville, was painfully injured recently in an automobile accident.——Dr. Louis S. Dunn, Chester, was injured in an automobile accident, February 19.——Major James F. Edwards, M. C., Pa. N. G., has been mustered out of the service and resumed his duties as director of the Department of Public Health of Pittsburgh.

Philadelphia

Medical Institutions.—The Visiting Nurse Society of Philadelphia, stating that demands for services of its staff of nurses have exhausted its sources, appeals to each physician for a yearly contribution of $1 to carry on its work among poor patients. Some of the latter pay 50 cents per visit; those not able to do this are helped without charge.

Additional City Nurses.—Twenty-two additional visiting nurses and fourteen inspectors have been added to the bureau of health corps by Dr. Wilmer Krusen, director of public health and charities, the result of the $25,000 appropriation made by councils. The nurses comprise a special staff which were employed during the infantile paralysis epidemic of last year. The regular staff already consists of fifty nurses.

RHODE ISLAND

Society Notes.—At the annual election of officers of the Washington County Medical Society, held in Westerly, Dr. Frank C. Pagan, Westerly, was elected president; Drs. Alexander B. Briggs, Ashaway, and Patrick J. Manning, Wickford, vice presidents, and Dr. William A. Hillard, Westerly, secretary-treasurer.——The Franco-American Medical Society, Providence, entertained at a dinner dance at the Narragansett Hotel, January 11.

Licenses Revoked.—At its meeting, held Dec. 14, 1916, the state board of health revoked the license of Dr. Charles Seward Parker, on the ground of gross unprofessional conduct.——On May 25, 1916, similar charges were brought against Dr. Albert B. Jones of Providence, but on the assurance from Dr. Jones' attorney that he had absented himself from the state and did not intend to return, the charges were postponed and his certificate has not been revoked.

VERMONT

Septic Sore Throat at St. Albans.—On account of the epidemic of septic sore throat at St. Albans, where there are said to be 1,200 cases, churches, schools and theaters have been closed, and the state board of health has interdicted public gatherings of every kind. The spread of the disease is believed to be due to the handling of milk by infected persons.

State Board Election.—At the annual meeting of the Vermont State Board of Medical Registration, held at Montpelier, February 13, the following officers were elected for the next biennial period: president, Dr. Schuyler W. W. Hammond, Rutland; vice president, Dr. Percy L. Templeton, Montpelier; secretary, Dr. W. Scott Nay, Underhill, and treasurer, Dr. George I. Forbes, Burlington. All meetings of the board will hereafter be held at Burlington, on the second Tuesday of February and July instead of alternating between Burlington and Montpelier as before. This affords opportunity for the use of the advantages offered by the University of Vermont, College of Medicine, whereby practicable examination may be conducted.

VIRGINIA

Hospital Items.—At a meeting held in Abingdon it was decided to erect in the near future a hospital building to cost $50,000 in memory of Dr. George Ben Johnston. The corporate name of the institution will be the George Ben Johnston Memorial Hospital of Southwest Virginia.

Personal.—The resignation of First Asst. William H. Whitmore, M. C., Va. N. G., was accepted, February 10.——Drs. Andrew D. Parson and J. A. Alexander Lipnick, ambulance surgeons at the Virginia Hospital, Richmond, have been succeeded by Drs. Clark and Edwards.——Mr. C. P. Cardwell, Hanover, has been appointed a member of the board of visitors of the Medical College of Virginia, Richmond, to succeed the late Dr. George Ben Johnston, Richmond.

WASHINGTON

Personal.—Dr. D. R. Forbes, Seattle, has returned after two years of service with the allied forces in France.

Simplification of Death Certificate.—Dr. John B. Anderson, health officer of Spokane, has sent a circular letter to physicians in the city asking their cooperation as regards the standardization of causes of deaths on death certificates. He suggests that in certain cases the international classification number be used instead of the name of the disease.

WISCONSIN

Sanatorium Bonds Voted.—The board of supervisors of LaCrosse County has voted to bond the county for $50,000, the proceeds to be applied to the establishment of a tuberculosis sanatorium. A site has been selected overlooking the Mississippi and Black River valleys.

Proposed Health Legislation.—Senator Pullen has introduced into the state legislature a number of bills on health topics. One provides that teachers shall send home any pupil who is unclean or infested with vermin. Another provides for a health certificate as a preliminary for a marriage license for all persons who have been afflicted with venereal disease, while a third bill provides for the reporting of venereal diseases to the public health authorities.

Hospital Notes.—The city council of Kenosha has appropriated $20,000 toward the cost of an isolation hospital to be operated in connection with the Kenosha Hospital. The balance of $20,000 will be raised by subscription.——One hundred thousand dollars of the $150,000 required to obtain a similar sum from Mr. and Mrs. Ferdinand Schlesinger for the Milwaukee Children's Hospital has already been raised.——The name of St. Olaf's Hospital, Superior, has been changed to the Martin Luther Hospital.

Personal.—Dr. Henry C. Werner, Fond du Lac, has been appointed head of the new State Home for the Feebleminded, Union Grove.——Dr. Joseph P. Donovan, who retired as city health officer of Madison, February 1, after a service of thirteen years, was given a testimonial of thanks and appreciation by the board of health at its meeting, February 16.——Dr. Adellon P. Andrus, Ashland, has accepted the position of assistant superintendent and senior physician to the State Tuberculosis Sanatorium, Waukesha.——Dr. Clarence A. Richards, Rhinelander, has been appointed a member of the state board of health, to succeed Dr. Hasse A. Meilike, Clintonville, term expired.

CANADA

University News.—The names of a number of McGill University graduates who are now overseas have been brought to the notice of the secretary of state for services rendered in connection with the war. They are: Col. Lorne Drum, Ottawa, Ont.; Lieut.-Col. Frederick G. Finley, Montreal, Que., officer in command of No. 1 Canadian General Hospital; Capt. James R. Goodall, Montreal, Que.; Major Lewis E. W. Irving, Edmonton, Alta., and Capt. C. C. Hale, London, Ont.

Personal.—Capt. Harry J. Watson, Winnipeg, is attached to the Perkins Bull Hospital, England.——Capt. Roland W. Young, Oshawa, Ont., after serving for a year in a hospital in Malta, is now medical officer of a prisoners' camp, 9 miles from Cairo, Egypt.——Dr. Charles L. B. Stammers, Smith's Falls, Ont., who has seen service in England, France, Malta, Egypt and Saloniki, is home on sick leave.——Capt. Harold C. Parsons, Toronto, with the University of Toronto Base Hospital at Saloniki, was returned ill to England, and has recently departed for Barbadoes to recuperate.——Dr. James B. Brown, Toronto, who was serving in the Mesopotamia campaign, returned home recently.

The Canadian Army Medical Corps.—Col. Frederick W. Marlow, Toronto, Ont., made a report before Parliament the past week, and recommended the completion of the organization of the service and, where necessary to bring the medical branch of the service up to the required standard, the increase of administrative staffs; the appointment in some districts of officers brought back to Canada from overseas; consideration of the advisability of increasing the permanent army medical corps for duty in Canada; frequent inspections of all districts and camps; the appointment of an officer for inspection, and the placing of the care of all returned soldiers under the Canadian Army Medical Corps, instead of under the Hospitals Commission, as at present. Colonel Marlow also advises the urgent consideration of the desirability of more hospital accommodation.

Canadian Doctors on Army Duty.—The minister of militia, in announcing that the Canadian Hospitals Commission would hereafter confine its work to the business side of hospital work, and that the Army Medical Corps would have charge of returned wounded soldiers, stated that the officers of the Canadian Army Medical Corps now number approximately 1,800, of whom about 500 are in Canada, and the balance serving overseas. A large proportion of those in Canada are assisting in carrying on the work of the Canadian Hospitals Commission. In addition to the numbers given above, there are 400 civilian practitioners partially employed in military work in Canada, and more than 400 Canadian doctors have proceeded overseas to join the Royal Army Medical Corps. It is announced that others who have not as yet been engaged will have an opportunity for valuable patriotic work in the near future.

GENERAL

Missouri Valley Physicians to Meet.—The annual meeting of the Medical Society of the Missouri Valley will be held in Keokuk, Iowa, March 22 and 23, under the presidency of Dr. Charles R. Woodson.

New Naval Medical Officers.—The customary graduation exercises of the Naval Medical School, Washington, were omitted at the last session, and the sixteen members of the class were presented with their certificates after a brief address by Surgeon General William C. Braisted.

New York Central Surgeons Hold Meeting.—At the annual meeting of the Railway Surgeons' Association of the New York Central Lines, held in Columbus, Ohio, February 22, Dr. William A. McMillan, Charleston, W. Va., was elected president; Drs. Harry S. Nobles, St. Marys, Ohio, and Ezra S. Koons, Glouster, Ohio, vice presidents, and Dr. John E. Cannady, Charleston, W. Va., secretary.

Rucker Guest of Honor.—The police and fire surgeons of Philadelphia gave a dinner in honor of Assistant Surgeon General William Colby Rucker, U. S. P. H. S., at the Racquet Club, Philadelphia, February 17, at which Dr. Rucker delivered a lecture, illustrated by lantern slides, showing the conditions that lead to the spread of contagious diseases in the tropics, and also the way in which these diseases are fought.

Tri-State Physicians Meet.—At the annual meeting of the Tri-State Medical Association of the Carolinas and Virginia, held in Durham, N. C., February 21 and 22, the following officers were elected: president, Dr. David T. Tayloe, Washington, N. C.; vice presidents, Drs. James K. Hall, Richmond, Va.; Addison G. Brenizer, Charlotte, N. C., and James R. Young, Anderson, S. C., and secretary-treasurer, Dr. Rolfe Hughes, Laurens, S. C. (reelected). The next meeting will be held in Spartanburg, S. C.

To Study War Medical Needs.—The commission of national defense at its session in Washington, D. C., February 24, discussed the question of the medical and surgical equipment of the army and navy in war. Dr. Karl A. Connell, New York, who had been on duty with the American Ambulance, Paris; Dr. Alexis Carrel, who has been working with the French army, and Col. Herbert A. Bruce, Toronto, formerly inspector general with the Canadian forces, appeared before the council and discussed actual war conditions.

"Medicine and Surgery": A New Publication.—The initial number of *Medicine and Surgery* of St. Louis has been received. The editor-in-chief is Dr. Philip Skrainka, the associate editorial staff consisting of men from various parts of the country. Special numbers on surgery, obstetrics and gynecology, genito-urinary diseases and syphilis are announced to be issued throughout the year. The publication is artistically prepared, and typographically is excellent. The contributions in this initial number cover a variety of surgical subjects and their general character is promising for future issues.

Bequests and Donations.—The following bequests and donations have recently been announced:

City Hospital, Oswego, N. Y., a bequest of $3,000, by the will of Leonard Ames.

Perkins Institution and Massachusetts School for the Blind, Boston; Boston Kindergarten for Blind, and Avon Home, Cambridge, Mass., $5,000 each; Cambridge Home for Aged People, $4,000; Boston Floating Hospital, $2,000, and Industrial School for Crippled and Deformed Children, $1,000, by the will of Mrs. Esther W. Smith, Cambridge.

Home of the Merciful Savior for Crippled Children, Philadelphia, $30,000, by the will of Mrs. Nannie D. Connarol.

Rush Hospital for Consumptives; Free Hospital for Consumptives and Home for Incurables, Philadelphia, each $2,000 and St. Vincent's Maternity Hospital, Philadelphia, $3,000, by the will of Suzanne E. Nead.

Pennsylvania Hospital for the Insane, a contingent bequest of the principal of a trust fund amounting to $100,000, by the will of James Anspach, Philadelphia.

The tuberculosis work of the Vanderbilt Clinic of the College of Physicians and Surgeons in the City of New York, and The Tuberculosis Clinic of the Presbyterian Hospital, New York, each $10,000; the Home Hospital for Tuberculosis, conducted by the New York Association for Improving the Condition of the Poor, $12,000; for the relief of tuberculous soldiers in Europe, $3,000; for research work of the Babbott Memorial Laboratory, of the Lumis Sanatorium, $2,000; for research work in tuberculosis at the Trudeau Foundation at Saranac Lake, N. Y., $2,000, and to the Sunny Side Farm for Tuberculous Children at Liberty, N. Y., $250,000, appropriated by the East River Homes Foundation of New York.

Aid to the Belgian Profession.—The report of the treasurer of the committee of American physicians for the aid of the Belgian profession, for the quarter ending Feb. 28, 1917, shows the following contributions:

Dr. L. Waller Deichler, Philadelphia (second contribution)		$ 3.00
Previously reported receipts		7,958.26
Total receipts		$7,961.26
Previously reported disbursements:		
1,625 standard boxes of food @	$2.20	$3,575.00
1,274 standard boxes of food @	2.30	2,930.20
353 standard boxes of food @	2.28	804.84
Total disbursements		$7,310.04
Balance		$651.22

F. F. SIMPSON, M.D., Treasurer,
5 Jenkins Arcade Bldg., Pittsburgh.

National Board Examination.—The second examination to be given by the National Board of Medical Examiners will be held in Washington, D. C., June 13, and will continue about one week. Application blanks and information regarding this examination may be obtained from the secretary of the board, Dr. John S. Rodman, 2106 Walnut Street, Philadelphia. The following states have accepted the certificate of the national board: Colorado, Delaware, Idaho, Iowa, Kentucky, Maryland, New Hampshire, North Carolina, North Dakota and Pennsylvania. Favorable legislation is pending in twelve other states. Successful applicants may enter the reserve corps of either the army or navy without further professional examination, providing their examination papers are satisfactory to the boards of examination of these services. The certificate of the board is also accepted as a qualification for admission into the Graduate School of the University of Minnesota, including the Mayo Foundation.

Examinations in Ophthalmology.—The American Board for Ophthalmic Examinations held its first examinations at Memphis, Tenn., Dec. 14 and 15, 1916, when twelve applicants appeared for examination. Those who have been passed by the board will be duly certified after its next regular meeting. The regular annual examination for 1917 will be held just before the New York meeting of the American Medical Association. At that time only those whose applications are filed before March 1 can come up for examination. As the number of applicants from any particular section of

the country becomes sufficient, special examinations will be arranged at the most convenient place that will furnish the needed facilities, the giving of a practical clinical and laboratory examination being possible only where good clinical facilities are available. Details with regard to these examinations and the requirements to be met can be obtained from the secretary, Dr. Frank C. Todd, 506 Donaldson Bldg., Minneapolis.

FOREIGN

American Surgeons Return to Their Work.—The American surgeons who left Graudenz after the diplomatic break between Germany and the United States have returned and resumed their work.

Ambulance News.—A new section of the American Ambulance left Paris for the front, February 27.——Fifty new recruits for the American Ambulance arrived in Paris, February 25.——A medical unit of ten physicians and ten nurses, financed by Hadassah, an organization of Jewish women, will be sent to Asia Minor to combat epidemics there.——Graduates of the class of 1885 of Harvard University have raised the necessary funds to procure two fully equipped ambulances, which will be presented to the American Ambulance, Paris.

Deaths in the Profession Abroad.—Surg.-Col. Sir Benjamin Franklin, aged 72; Indian Medical Service, M. R. C. S., England, 1867, L. S. A., London, 1869; surgeon to the Viceroy of India, and later director general of the Indian Medical Service and honorary physician to Queen Victoria and King Edward VII, died suddenly in London, February 17.——**A. Battelli,** professor of experimental physics at the University of Pisa, aged 55. His principal works were on electricity from the medical standpoint, experimental physics, etc. His pioneer researches in these lines won several important prizes. For some years he has been a member of the Italian national legislature.

Death of Dejerine.—The cable brings word of the death of the well known French neurologist, Jules Dejerine, professor of nervous diseases at the University of Paris. His neurologic service has been at the Salpêtrière in recent years, but during the war he has been in charge of the special central service for nervous affections among the wounded. His wife, née Klumpke, is an able neurologist also, and has been associated with him in much of his work, from their joint "Anatomy of the Nerve Centers" published in 1894, to recent publications on regeneration of nerves after suture, etc. He was a member of many scientific societies at home and abroad, and is said to have been particularly fond of trout fishing.

BERLIN LETTER

(Received March 2, 1917)

BERLIN, Dec. 16, 1916.

Women Students in the German Universities During the Second Winter of the War

During the second winter of the war the German universities had 4,820 women students enrolled, an increase of 24 per cent. over the previous year (3,920 students), and an increase of 100 per cent. over the enrolmem of 1910. Nine per cent. of all students enrolled at the present time are women; last year the percentage was 7.4, and five years ago it was only 4.4. Last year only 10,000 of the 50,000 male students were in attendance. One third of the enrolled students were women. The registration of the women students in the various courses has changed notably during the last five years. The registration in mathematics, the natural sciences and medicine has shown the greatest increase. At present 24.5 per cent. of women students are registered in medicine. Five years ago 21.8 per cent. were so registered. The number of women medical students now is 1,182; the largest number before was 527. In mathematics and the natural sciences, 894 women are now registered, as against 356 or, in percentages, 18.5 as against 14.8. In dentistry, seventy-four are registered as against forty-nine heretofore. In philosophy, philology and history, the number has increased from 1,370 to 2,393. Political economy, agriculture, law, theology and pharmacy also show increased registrations.

A Hygienic Testament of the Late Professor Czerny

Among the papers of the late Professor Czerny was found the following "hygienic testament": 1. Life is not the greatest gift. Human ideals stand higher. A belief in the future, the hope that man will no longer combat his fellows because of differences of opinion, the fulfilment of true Christian love, will create a heaven on earth. 2. However, life is the only real possession of man. Money and lands are passing possessions. Accomplishment ceases with death. 3. It is therefore your duty to conserve body and soul, and to avoid all things which may endanger or shorten the duration of this precious gift. Not every one is blessed with a cheerful disposition, good will toward others and ripe judgment in meeting the little annoyances of life. Only he who succeeds in winning these virtues for himself will truly enjoy life. All men are not equally endowed. He who stands should see that he does not fall. 4. Look well after the health of body and mind. Divide the day wisely into hours of work and recreation. Eat good, wholesome food. Be clean in every respect and live in a dry, sunny, well ventilated habitation. 5. Eight hours of work, recreation and mental development, eight hours of rest, and eight hours of sleep are best. Two hours of sleep before and two hours of sleep after midnight are the most refreshing. Two hours should be devoted to the three meals of the day, two hours for art and lectures, two hours for the family, your friends and the public, two hours for a sane sport (walking, riding, driving, rowing, swimming, gymnastics and play in the open air). 6. Food should be easily digestible, nourishing and meeting the requirements of the metabolism. No more than 1 liter of food and drink should be taken at each of the three meals. A greater amount than this overloads the stomach. Moderation in eating and drinking should be practiced. An exclusive vegetable diet, in quantities sufficient for the motor activity of the stomach and intestine, does not contain enough calories. Therefore, albumin and fat, in easily digestible form (meat, fish, eggs, butter, milk and cheese) should be added to a vegetable diet. 7. Do not be a slave to your appetite. Alcohol (beer, wine, whisky, liqueurs), coffee, tea and tobacco have no nutritive value, but from habit, extending back through many generations, they have become necessary to man, and it is difficult to substitute anything to meet the requirement. They are all poisons, whose toxic effects have been mitigated by habituation, but in immoderate quantities they shorten the life of the predisposed individual. Tobacco and alcohol disrupt the nervous system, and lead to arteriosclerosis. Coffee and tea disturb sleep, and should not be imbibed after 4 o'clock. At least once during his lifetime every man should deprive himself of the use of any and all of these substances. 8. Children must be taught cleanliness. They should be given at least one sponge bath with cold water each day, should brush their teeth twice a day and likewise cleanse the mouth and wash the face and hands. A full bath should be taken weekly. Clothing and bed linen should be changed regularly. Do not use any dishes or bathtub but your own unless you are positive that they are well cleansed. Your habitation must be roomy, dry and sunny, and sleeping rooms must be large and well ventilated. 9. Do not put any more children into the world than you can educate and feed. 10. When ill do not delay securing the attendance of a competent physician, and follow his instructions closely.

LONDON LETTER

LONDON, Feb. 12, 1917.

The War

VOLUNTARY MOBILIZATION OF THE PROFESSION

The Central Medical War Committee has arrived at the conclusion that the whole situation with regard to the present position of the profession in relation to the war has been changed by the prime minister's statement that the time has come for the adoption of the principle of universal national service. The committee has sent a letter to him pointing out the special position and difficulties of the medical profession. By repeated appeals to the profession under the voluntary system, by its enrolment system, and by its system of calls subsequent to the passing of the military service acts, the committee has been able to provide a large number of surgeons for the army, but it is becoming increasingly difficult to keep up the supply. There are still men of military age in considerable numbers left in civil practice, but unfortunately a large proportion practice in industrial and munition areas in which the supply of physicians in proportion to population, even in time of peace, was not too great, and is now barely equal to the demands made on it. The committee, therefore, was brought to consider whether it would not be necessary to ask the government that some special steps should be taken to organize the whole medical profession for the national needs, civilian as well as military. The committee approves

the general principle of mobilization of the medical profession, apart from any question of the general mobilization of the whole community, so that any physician shall give such service, whether in a military or a civil capacity, as he or she is competent to give, when required to do so by the state. The committee had intended to ascertain by an appeal to the profession whether or not its members were willing that the government should be told on their behalf that steps should be taken thus to organize the medical profession, irrespective of what was done for the rest of the community. But while the subject was under discussion, the prime minister's statement materially altered the whole situation, as the government intends that the whole community shall be mobilized for the national service. The committee thereupon resolved to seek an interview with the director-general of national service with the intention of putting the special position of the medical profession before him.

HONOR FOR THE DIRECTOR-GENERAL OF THE ARMY MEDICAL CORPS

Sir Alfred Keogh, director-general of the Army Medical Corps, has received from the king the order of G. C. B. (Grand Cross of the Bath). This is the highest honor which can be conferred on a soldier, and this is the first case in which a medical officer has received it. There has been no greater feat in the war than the swift organization and expansion of the hospital and medical service to meet the needs of our vast army, and that it has been accomplished with so little friction is due not only to the work which Sir Alfred has done during the war, but also to his preparation and planning, which he did during his previous tenure of his present office. When war broke out he had retired, but owing to his experience and capacity he was called back to his post. He has with great success harmonized the military element proper in the army with the great civilian influx, which includes most of the specialists of the country. An Irishman, he has shown all the tact and insight in handling men which has made many of his race great administrators. In the entirely new circumstances with which he was faced, he has exhibited an adaptability and flexibility which would probably be wanting, at his age at any rate, in the surroundings of the most conservative institution—the War Office—in the conservative country, if the post had been occupied by one of the more stolid English race. A remarkable tribute has been paid to him by Lord Esher, who states in a letter to the *Times* that when he was chairman of the committee which was reconstituting the War Office and proposed to put the director-general of medical services under the adjutant-general, Sir Alfred Keogh, in warm and almost impassioned language, tried to induce him to reconsider the proposal. At that time, when we were still under the influence of South African experience, and when only one or two prescient soldiers foresaw the inevitable European war, all military influences were brought to bear on the committee to limit the numbers of the army council. No one except Sir Alfred Keogh envisaged the Royal Army Medical Corps as other than an important but small branch of the "services" attached to an army in the field. It was not realized that to keep a force in the field was at least as vital a necessity as to recruit it. The present war swept away this illusion, but the mischief was done. How much of the suffering undergone by our soldiers then and since was due to the shortsightedness of the committee and notably of himself, Lord Esher says will never be known. The control of the adjutant-general's branch over the Army Medical Corps was responsible not only for the early failure to grip the medical factors of this war but also for the hampering conditions under which Sir Alfred Keogh has worked. His triumphs, and those of the Army Medical Corps have been achieved in spite of obstacles which the subordination of science to ignorance, of elasticity to military discipline, explains but cannot justify. So much for the usual official conservatism.

Increase in Number of Women in Industry

The tremendous increase which has occurred in the number of women engaged in industry since the beginning of the war is officially stated to amount to 850,000. In industrial occupations in July, 1914, there were 2,133,000 women; since then 314,000 have been reported as directly taking the place of men, the percentage of replacement being 14.7. In commercial occupations in July, 1914, there were 496,000 women; since then 264,000 women have been substituted for men, a percentage of 53.3. These two groups have evidently absorbed the largest number of women. But compared with peace-time figures the percentage of women now doing men's work rules highest in banking and finance, in transport, and in government establishments—a section which includes arsenals, dockyards, and national shell-filling and projectile factories. The accompanying table shows how largely women have been taking men's places in these branches of employment during the war.

INCREASE OF WOMEN WORKERS

Employment	Women Employed in July, 1914	Replacements by October, 1916
Banking and finance.....	9,500	37,000
Transport (nonmunicipal)....	17,000	41,000
Government establishments...	2,000	117,000
Local government	184,000	31,000

In industrial occupations the proportion of substitutes has been greatest in the chemical and metal trades. There is an actual drop in the number of women employed in the textile, clothing, and paper and printing trades. The dearth of industrial women's labor is most acute in the typical women's industries, in which the general rate of wages is considerably less than can be earned in munition factories or on men's work. Industrial substitution has been proceeding steadily. Various railways employ women as goods porters; at certain dockyards they are loading and unloading wagons, discharging loads of shale, etc., and working as pitprop and timber carriers and doing light cargo work. Women are also being engaged by plumbers as laborers; in india-rubber work they are curing tires; and in the pottery industry employers are now gradually introducing women as biscuit oven placers, although the heavy nature of the work is a difficulty. A curious side light on the restlessness caused by the war in typical feminine occupations is the estimate that 100,000 women have left domestic service and gone into war work.

PARIS LETTER

Paris, Feb. 8, 1917.

The War

AMERICAN AMBULANCES AT THE FRENCH FRONT

A new sanitary section of American ambulances has just left for the front. Like the preceding ones, this section is composed of twenty automobile ambulances and seven auxiliary automobiles (reserve cars, shop, kitchen, etc.). The initial cost of one of these sections is $30,000 (150,000 francs), and the yearly cost of maintenance is $15,000 (75,000 francs). At present there are eight sections in the service, the initial cost of which is $240,000 (1,200,000 francs), and the yearly maintenance of which costs $120,000 (600,000 francs). All the American ambulance men are students of the large universities who have volunteered for this service. More than fifty of these have already been decorated with the war cross, and two have received the military medal; some have been killed. The funds for the American ambulances have been furnished by American friends of France. The inspector general of the American ambulance field service is Mr. A. Piatt Andrew.

The president of the council of ministers has just received a telegram from Mr. Frederick Allen, president of the National Allied Relief Committee, informing him that the Allied Bazaar at Boston, arranged by the committee, yielded $450,000 and that $447,000 was realized from the bazaar held at Chicago.

NURSES AS ROENTGENOGRAPHERS

The undersecretary of state of the military health service has decided to entrust the roentgenographic work to the nurses of certain sanitary formations. Therefore he has ordered the directors of the service to inform the temporary nurses in the military hospitals subject to their orders that a course in the theory and practice of roentgenography will soon be begun at the Edith Cavell school in Paris, under the direction of Mme. Curie.

WAR NEUROSIS CAUSING GRAVE DIAGNOSTIC ERROR

Dr. G. Lian has published observations which were made on a soldier sent to a hospital with a disease diagnosed as "serious cardiac trouble (incapable of ever rendering further service in the army)." The striking symptom of this patient was a rolling, heaving movement of the body which threw forward the left hypogastric region and the left side of the chest while retracting the left clavicle, accompanied by spasmodic contractions of the muscles of the left anterior half of the thorax. A thorough clinical examination revealed the fact that there was no definite connection between this body movement and the regular radial pulse (25 respirations to 18 radial pulse beats). The patient suffers with insomnia, headache,

tremors, mydriasis, and an exaggeration of the tendon reflexes. These symptoms appeared during a four days' bombardment in October, 1914. This disease, then, is not a grave cardiac disease, but a severe neurosis, a so-called war neurosis, the principal manifestation of which is a rhythmic, spasmodic contraction of the muscles of the left anterior half of the thorax.

TREATMENT OF COMPOUND FRACTURES

Dr. Depage of Brussels commends the Carrel method in the treatment of compound fractures. Immediately on the arrival of the patient at the field hospital the wound is laid open widely, bruised tissues are trimmed off, and all foreign material removed. Any bone splinters which appear to be alive are left undisturbed. Absolute hemostasis is produced. A number of Carrel tubes are then inserted, and the wound is irrigated every two hours with Dakin's solution. The dressings are renewed daily, and at each dressing the wound is cleansed thoroughly with neutral sodium oleate. The treatment is controlled by a thorough and careful bacteriologic examination. When the smear is negative for two or three days, the wound is closed by suture. The edges are trimmed, all cicatricial tissue being removed, and a perfect closure is effected. Granulations are left undisturbed. Flap operations are done when necessary, and resort is had to Tiersch grafting when this is indicated. Depage's results have been exceedingly gratifying.

The Apportionment of Sugar and the Use of Saccharin

In certain cities of the province (Pau, Troyes, etc.) sugar is being distributed by card. The central committee of sugar distribution favors using saccharin in the preparation of such products as have nutritive value without sugar, such as biscuits and pastry. The committee is strongly opposed to the substitution of saccharin for sugar in the manufacture of chocolate, because its greatest nutritive value is the sugar, which is an important ingredient in the preparation of chocolate. The committee is also opposed to the use of saccharin in sugar bonbons.

Assistance for the Roumanian Hospitals

A committee, composed of many noted women of the Roumanian colony of Paris, has just been formed to supply Roumanian hospitals with linen, woolen goods, and particularly woolen clothes. Donations will be received at the office of the committee, Avenue d'Antin, 49 bis, Paris.

The joint committee of the Parisian press at its last meeting decided to direct attention to the work of Mme. Lahovary, wife of the Roumanian minister to France, which is being conducted under the patronage of the queen of Roumania. The object is to aid the soldiers and people of Roumania who have become victims of the war. The address of this committee is 114 Champs-Elysées, where all gifts of currency or goods will be received. The names of the subscribers will be published in *Le Figaro*.

Prophylactic Value of Antitetanic Serum

Dr. Thiéry, associate professor at the Faculté de médecine de Paris, at a recent meeting of the Société de Chirurgie de Paris refuted the principal arguments invoked in favor of the prophylactic efficacy of antitetanic serum. It is said that since preventive injections are systematically made, tetanus is no longer observed. But, he asked, was it much observed before they were made? And do those who do not use the serum see more cases of tetanus than do those who use the serum? Before the war, Thiéry had never observed tetanus in a wounded patient who was treated in time and without serum. At the beginning of the war, numerous cases of tetanus were observed; since serum has been used prophylactically none have been observed. But this does not take into consideration evolution in the treatment of fresh wounds. Thiéry has obtained the best results with simple surgical operations and the use of antiseptics. Before the war Thiéry saw tetanus develop in a patient who had been given a timely injection of serum. A wounded soldier discharged from service succumbed to tetanus after his return home; he had also received injections of serum. One would say that in the first case the injection should have been repeated; retarded tetanus would be the verdict in the second case. The fact remains, however, that in both these cases of tetanus and death, serum injections had been given.

Dr. Riche reported the case (related to him by Dr. Desplas) of a man wounded in the shoulder by a bullet twenty months previously who had not received at that time an antitetanic injection. Sixteen days after operation, in which fragments were extracted, and in spite of an antitetanus serum injection given at the operation, and another injection given at a later operation, the patient developed generalized acute tetanus which lasted fifty days. According to Riche this observation may be interpreted in two different ways. The deduction would be that the patient remained for twenty months a carrier of tetanus germs; the bacilli, encysted by cicatricial tissue, as was the projectile, could have been liberated at the time of operation and cause generalized, acute tetanus in spite of one injection of serum made at that time and of a second eight days later. If this is true, then it is reasonable to doubt the efficacy of the preventive serum, not only as it is habitually employed, that is, after receipt of a wound, but also when it is given before receipt of a wound. It is possible that the serum itself caused the clinical picture; not that serum can cause tetanus; but it can produce tetaniform contractions which would correspond with relative apyrexia occurring in the course of generalized contractures. Another point in favor of this hypothesis is the fact that Desplas removed with the projectile the fibrous tissue which surrounded it, thereby eliminating to a great extent the probability of inoculation. It is not, therefore, the preventive efficacy of the serum, but its innocuousness, which would be doubted. And, perhaps, we should find there an explanation for the so-called cases of tetanus overcome by a preventive injection of serum.

At the Battle of the Marne there was a shortage of serum, and therefore, it is said, there were many cases of tetanus. The supply has since been replenished and tetanus has disappeared—proof of the efficacy of the serum. But Riche does not believe this to be the case. The Battle of the Marne was an event to which nothing that has since happened can be compared. Conditions existing at that time explain the extraordinary number of cases of tetanus observed. Among these were the great number of men wounded in a short time, difficulties of administering immediate treatment, ignorance of the necessity of early operation, the multitude of horses used as mounts and for draying purposes, and evolution of surgical technic in a region especially tetaniferous (swamp lands).

Dr. Walther, on the other hand, is firmly convinced of the prophylactic value of antitetanic serum. Among 270 wounded German soldiers, he observed nineteen cases of tetanus. They had all been wounded in the Battle of the Marne, and had been abandoned in the field hospitals by the retreating German army. They were without care for several days. On their arrival at the hospital, they were given injections of antitetanic serum, but there was a shortage of serum which prohibited its administration in some cases. Only one case of tetanus occurred among those who received injections. All the other cases developed among those who had not been treated with the serum. The preventive injection, in spite of delays (from five to eight days after the receipt of wounds) was therefore unquestionably of value. Walther is also convinced of the therapeutic efficacy of the serum. He cites two serious cases of tetanus in which a cure was effected by intraspinal injections of serum in quantities of 200 and 250 c.c., respectively. Dr. Pierre Delbet, professor of clinical surgery at the Faculté de médecine de Paris, did not believe that at the present time the value of antitetanic serum could be doubted. Thiéry contested the efficacy not only of antitetanic serum, but also of all forms of serotherapy. Dr. Proust had occasion to compare the differences of manifestations of primary tetanus in patients who had received injections and those who had not. At the beginning of the war, in August, 1914, he saw many fatal cases of primary tetanus. Unfortunately, antitetanic serum was not available and the wounded arrived at the interior hospitals without having received injections. Since then, on the other hand, under similar conditions of observation, not more than four cases of tetanus were discovered among more than 5,000 wounded soldiers, and even these four cases were attenuated to a considerable extent. All these facts speak volumes for the value of preventive injections of serum in tetanus.

Dr. Leriche claims to have observed in August, 1914, in the Vosges region and in Alsace, numerous cases of tetanus followed by early death. He did not have any serum. In September and October, 1914, there was a tetanus epidemic in the Oise and Somme districts. Toward the middle of October a supply of serum arrived. Following its use, tetanus practically disappeared. Surgical treatment of wounds is not the only cause of the disappearance of tetanus. On the other hand, systematic reinjection before operation eradicates late or retarded tetanus, just as the preventive injection caused primary tetanus to disappear.

Marriages

LEMUEL PINCKNEY PETERS, M.D., Clayton, Ill., to Miss Minnie J. Lucas of Timewell, Ill., at Chicago, January 27.

LEO ROBERT FITZGERALD, M.D., Detroit, to Miss Winifred LaMere of Florence, Wis., at Detroit, February 19.

LIEUT. ASA MARGRAVE LEHMAN, M. C., U. S. Army, to Miss Jessie Evelyn Roberts of Ardmore, Pa., February 2.

JOHN EDWARD SIEBEL, JR., M.D., Chicago, to Miss Pearl Meade of Los Angeles, at St. Louis, February 19.

P. A. SURG. RICHARD HENRY LANING, U. S. Navy, to Miss Marguerite C. Boyer, at New York, February 5.

ASST. SURG. CHARLES JOSEPH MCDEVITT, U. S. P. H. S., to Miss Katherine O'Neill, at Seattle, February 7.

PASQUALE ROMEO, M.D., Bridgeport, Conn., to Miss Zula Zedeth Williams of New York, February 20.

ALEXANDER MAXWELL GLUECKSTEIN, M.D., to Miss Frances Davis, both of New York, February 22.

WILLIAM CLYDE ELLIS, M.D., to Mrs. Reba Elliot, both of Phoenix, Ariz., February 14.

Deaths

Abraham Mylin Barr, M.D., Pittsburgh; Jefferson Medical College, 1865; aged 82; major and surgeon of the One Hundred and Forty-Second and One Hundred and Ninety-Second Pennsylvania Volunteer Infantry, during the Civil War; for six years a member of the select council of Pittsburgh; for four years a member of the common council and for six years physician to the city of Pittsburgh and county of Allegheny; local surgeon to the Pennsylvania System; died at his home, February 15.

William Bancroft Anderton, M.D., New York; Bellevue Hospital Medical College, 1879; aged 60; a Fellow of the American Medical Association; assistant to the chair of obstetrics and diseases of women and children in his alma mater from 1881 to 1889; attending physician to the DeMilt and Bellevue Hospital dispensaries; a member of the New York Academy of Medicine and the Harvey Society; died at his home, February 23.

Everton Judson Abbott, M.D., St. Paul; University of Wooster, Cleveland, 1875; aged 67; formerly a member of the Minnesota State Medical Association, and president of the Ramsey County Medical Society; professor of clinical medicine in the University of Minnesota, Minneapolis; attending physician to the St. Paul City and County Hospital, and attending surgeon to St. Joseph's Hospital, St. Paul; died at his home, February 25.

A. Miner Straight, M.D., Bradford, Pa.; Western Reserve University, Cleveland, 1870; Bellevue Hospital Medical College, 1874; aged 69; a Fellow of the American Medical Association; local surgeon of the Pennsylvania, and Buffalo, Rochester and Pittsburgh railroads; consulting surgeon to the Bradford Hospital since 1886; died at his country home, Barondale, February 19.

Alva Naylor, M.D., Platte City, Mo.; University Medical College of Kansas City, Mo., 1905; aged 46; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; was instantly killed, February 19, by the overturning of his automobile while making a professional call near Platte City.

Edward Field Walker, M.D., Providence, R. I.; College of Physicians and Surgeons in the City of New York, 1876; aged 70; a member of the Rhode Island Medical Society; obstetrician to and president of the staff of Providence Lying-In Hospital; consulting physician to St. Aloysius Home; died at his home, December 12.

Walter Hildreth Ranks, M.D., Shelburne, Vt.; University of Vermont, Burlington, 1897; aged 41; formerly a Fellow of the American Medical Association; a member of the Vermont State Medical Society; died in the Mary Fletcher Hospital, Burlington, January 17, a week after an operation for gastric ulcer with perforation.

Lewis Watson Smith, M.D., Pittsburgh; University of Pennsylvania, Philadelphia, 1901; aged 43; a Fellow of the American Medical Association, and a member of the American Association of Obstetricians and Gynecologists; a member of the staff of the Pittsburgh Free Dispensary; died at his home, February 23.

Raphael Brodeur, M.D., Cadillac, Mich.; University of the Victoria College, Coburg, Ont., 1873; aged 69; a member of the Michigan State Medical Society; sometime coroner of Wexford County and city physician of Cadillac; died suddenly while returning from church in his automobile, December 21.

N. E. Wilson, M.D., Douglass, Kan.; University Medical College of Kansas City, 1907; aged 40; formerly a member of the Kansas Medical Society; once mayor of Douglass; local surgeon to the Santa Fe System; died in a hospital in Winfield, Kan., February 8, from postpharyngeal abscess.

Arthur Mott Haight, M.D., Indianapolis, Ind.; College of Physicians and Surgeons in the City of New York, 1874; aged 66; a member of the Michigan State Medical Society; for forty years a practitioner of Michigan; died at the home of his daughter in Greenfield, Ind., January 16.

Edward Calvin Culbertson, M.D., Canton, Ohio; Ohio Medical University, Columbus, 1900; aged 44; formerly a member of the Ohio State Medical Association; superintendent of the Canton Emergency Hospital for the last three years; died at his home, February 20.

Edmund Elwood Fall, M.D., Walla Walla, Wash.; College of Physicians and Surgeons in the City of New York, 1887; aged 57; for several years manager of the Walla Walla *Evening Statesman;* died at his home, February 10, from cerebral hemorrhage.

Isaac C. Lambert, M.D., Colfax, Ind.; Curtis, Physio-Medical Institute, Marion, Ind., 1888; Kentucky School of Medicine, Louisville, 1899; aged 67; a Fellow of the American Medical Association; died at his home, January 25, from pneumonia.

John Thomas Curtis, M.D., Abilene, Kan.; Northwestern University Medical School, Chicago, 1867; aged 79; assistant surgeon of the Ninety-Ninth Illinois Volunteer Infantry, during the Civil War; died in the State Soldiers' Home, Abilene, January 11.

Gustavus Pierce English, M.D., Boonville and Utica, N. Y.; Long Island College Hospital, Brooklyn, 1882; aged 59; a member of the Medical Society of the State of New York; a specialist in diseases of the nose and throat; died in Utica, February 15.

Edward George, M.D., Van Buren, Ohio; Medical College of Indiana, Indianapolis, 1876; aged 66; formerly a Fellow of the American Medical Association; a member of the Ohio State Medical Association; died suddenly at his home, February 21.

Winfield Scott McFarland, M.D., Sharpsville, Pa.; University of Wooster, Cleveland, 1885; aged 69; a member of the Medical Society of the State of Pennsylvania; also a druggist; died at his home, February 15, from cerebral hemorrhage.

Daniel Francis Ayres, M.D., Chicago Heights, Ill.; College of Physicians and Surgeons, Chicago, 1905; aged 47; formerly a Fellow of the American Medical Association; was found dead in his office in Chicago Heights, about February 12.

Edward Stark Parker, M.D., Pawtucket, R. I.; Harvard Medical School, 1900; aged 42; a member of the Rhode Island Medical Society; who was injured in an automobile collision several weeks ago; died at his home, February 18.

William Plunkett, M.D., Waterloo, Iowa; Michigan College of Medicine, Detroit, 1883; aged 83; for thirty years principal of a public school, and for fifteen years township clerk of Bayfield, Ont.; died at his home, February 13.

Howard Marsh, M.D., Russell, Kan.; Marion Sims College of Medicine, St. Louis, 1901; aged 45; a member of the Kansas Medical Society; a specialist on diseases of the eye, ear, nose and throat; died at his home, January 3.

Oramon Weed Burns, M.D., Winneconne, Wis.; Dartmouth Medical School, Hanover, N. H., 1877; aged 66; a member of the State Medical Society of Wisconsin; died at his home, January 17, from heart disease.

William Lee McFarland, M.D., Benicia, Calif.; Kansas City (Mo.) Medical College, 1890; aged 48; formerly a member of the Medical Society of the State of California; died at his home, February 2.

Humphrey M. Burfield, M.D., Bentonville, Ark.; Howard University, Washington, D. C., 1889; aged 73; for many years an official of the Pension Bureau, Washington, D. C.; died at his home, February 8.

Robert Emerson Thompson, M.D., Milwaukee, Wis.; Milwaukee Medical College, 1901; aged 51; formerly a member of the State Medical Society of Wisconsin; died at his home, February 22.

John Lunney, M.D., Darlington, S. C.; Eclectic Medical College of Pennsylvania, Philadelphia, 1864; aged 78; a Fellow of the American Medical Association; died at his home, February 17.

John L. Stearnes, M.D., Salem, Va.; University of Pennsylvania, Philadelphia, 1858; aged 82; a member of the Medical Society of Virginia; died at his home, February 22, from pneumonia.

William M. Clover, M.D., Knox, Pa.; Eclectic Medical Institute, Cincinnati, 1867; aged 86; formerly a Fellow of the American Medical Association; died at his home, February 26.

Edward Randolph Sumpter, Pulaski, Tenn. (license, Tennessee, 1901); aged 58; formerly a member of the Tennessee State Medical Association; died at Jacksonville, Fla., February 20.

Washington Jones Brandt, M.D., Brooklyn; College of Physicians and Surgeons in the City of New York, 1880; aged 58; died at his home, February 14, from cerebral hemorrhage.

Frederick Gilnack, M.D., Rockville, Conn.; College of Physicians and Surgeons in the City of New York, 1867; aged 72; died at his home, January 3, from epidemic influenza.

Ernest Emil Mullen, M.D., Merwin, Ohio, and Apopka, Fla.; University of the South, Sewanee, Tenn., 1894; aged 49; died at his winter home in Apopka, January 11, from influenza.

Herbert John Taxis, M.D., Pyrolite, Colo.; Jefferson Medical College, 1889; aged 52; formerly a member of the Colorado State Medical Association; died recently at his home.

Joseph E. W. Haile, M.D., Rockhill, S. C.; University of Pennsylvania, Philadelphia, 1880; Atlanta (Ga.) Medical College, 1882; aged 57; died at his home, February 11.

Jared Alonzo Greene, M.D., Boston; Eclectic Medical Institute, Cincinnati, 1867; aged 71; for one term mayor of Laconia, N. H.; died in that place, February 16.

Robert McChesney, M.D., Wilford, Utah; University of Virginia, Charlottesville, 1849; aged 89; died at the home of his daughter in Wilford, about January 24.

Henry Thomas Mairs, M.D., Osborn, Mo.; Missouri Medical College, St. Louis, 1888; aged 53; died at his home, December 29, from cerebral hemorrhage.

Duncan B. McFarlane, Tulsa, Okla. (license, Arkansas, 1903); surgeon in the Confederate Army during the Civil War; died at his home, February 8.

William Harvey Sanders, M.D., Paducah, Ky.; Long Island College Hospital, Brooklyn, 1864; aged 73; died at his home, January 26, from facial erysipelas.

J. W. Settle, M.D., Mexico, Mo.; College of Physicians and Surgeons, Keokuk, Iowa, 1864; aged 79; died at his home, January 30, from senile debility.

William Lincoln Paine, M.D., Westfield, Mass.; University of Vermont, Burlington, 1879; aged 62; died at his home, January 21, from pneumonia.

Frank E. Young, M.D., Canton, Ohio; Cincinnati College of Medicine and Surgery, 1874; aged 64; died at his home, February 3, from asthma.

William Landt, M.D., Mohawk, N. Y.; New York Medical College, New York, 1858; aged 23; died at his home, December 28, from pneumonia.

Walter W. Lee, M.D., Gordon, Ga.; Medical College of Georgia, Augusta, 1884; aged 63; died at his home, January 29, from heart disease.

Thomas J. Vance, M.D., Minden, La.; Jefferson Medical College, 1858; aged 82; a Confederate veteran; died at his home, February 3.

Hiram J. Hazelton, M.D., Barnett, Vt.; Homeopathic Hospital College, Cleveland, 1863; aged 78; died at his home, February 15.

Aurora W. Giddings, M.D., Anoka, Minn.; Albany (N. Y.) Medical College, 1854; aged 86; died at his home, February 3.

John P. Treacy, M.D., Pittsburgh; New York University, New York, 1862; aged 78; died at Chicora, Pa., February 8.

J. R. McCray, Tiffin, Ohio (license, Ohio, 1896); died at his home, February 9, from pneumonia.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

KILLING PUBLIC HEALTH LEGISLATION

Michigan and North Dakota Are Instructed How to Legislate by a Cincinnati Advertising Agency

The "patent medicine" fraternity is again up to its old tricks in attempting to defeat legislation that has for its object the protection of the public health. During the past few months some states, recognizing that the public had the right to know what it is taking when it prescribes for itself, have introduced bills in the legislatures which would regulate to some extent the sale of "patent medicines" and would require, among other things, the statement of the names and quantities of the active ingredients of such medicines. Such a bill was introduced in the legislature of North Carolina and it had the approval not only of the state board of health but also of the newly elected governor of that state. The "patent medicine" interests chloroformed the bill!

There are now before the state legislatures of Michigan and North Dakota, respectively, two bills which the "patent medicine" people are fighting tooth and nail. Not that the opposition comes openly and frankly from the nostrum interests; that isn't their way of doing business. The Thompson-Koch Co., a Cincinnati advertising agency, is the "Bunty" who "pulls the strings." We have just received from Michigan a circular letter which, according to our informant, "has been sent to every druggist in Michigan." It is in opposition to House Bill No. 187 introduced by Representative Littlejohn. Here is the letter:

THE THOMPSON-KOCH CO.
ADVERTISING AGENCY
NEWSPAPERS, STREET CARS, MAGAZINES, BILLBOARDS, ETC.

32 WEST SIXTH STREET
CINCINNATI, O.

"Please write or wire members of your State Legislature to use every legitimate influence to kill Michigan House Bill No. 187 by Littlejohn so-called formulæ disclosure registration and license bill would result in withdrawal of all advertising and sale of package, household medicines, cosmetics and hair tonics in your state. That is result desired by members of doctors trust who are responsible for and back of this same bill in twenty different states and defeated every time. We believe doctors trust thinks they control the Michigan Health Department. Withdrawal of advertised package medicines and household medicines would result in inevitable increase in useless, dangerous and needless operations and would compel a doctor's fee in every slight ailment. It is monstrous, vicious, mercenary and puts life and death in hands of political doctors without restraint, law or competition. The true object of this bill is to kill self-medication and compel your people to pay doctors fee in every slight ailment. The privacy of homes of people of Michigan in great danger. No possible good can result from this legislation. Advertised package medicines and household medicines are already governed by the strictest United States Food and Drugs Law, the Sherley Law, the Harrison Anti-narcotic Act and the United States Internal Revenue department's rulings on alcohol in medicines and the States Food and Drugs Act of Michigan. Do you know however that the doctors medicines in your state are entirely unregulated, but certainly should be. Doctors trust bill exactly like this one has just been defeated in North Carolina and it should surely be defeated decisively in your state. This is so important that we ask you to wire your Members of Legislature to defeat House Bill No. 187, and you will earn gratitude of the people of your state in defeating what we believe an under-handed attempt of doctors trust to prevent freedom in selling household medicines in your state. Fight it hard. Think, work quick to defeat this unjust bill. Thanks for help.

THE THOMPSON-KOCH ADVERTISING AGENCY."

The State Dairy and Food Department of Michigan has just issued a circular concerning House Bill No. 187. The facts it recites make interesting reading in connection with the highly colored piece of fiction sent out by the Thompson-Koch Advertising Agency. Here it is:

"The State Dairy and Food Department is charged by law with the inspection of all drugs and medicines as well as food in this state. It is made the duty of the department to find out what people put into their stomachs for

medicines as well as foods. There are several thousands of proprietary remedies on the market. Many of them have merit, some are useless, and some are plain frauds, like the consumption and cancer cures. To analyze and inspect all these remedies would cost the state a great deal of money and yet the people should be protected from imposition in the medicine line.

"The State Dairy and Food Department, after careful study of the situation, drafted a bill to meet the situation fairly for all concerned. House Bill No. 187, introduced by Representative Littlejohn, is not the product of any so-called 'Doctors' Trust.' It was drawn by the Dairy and Food Commissioner. No doctor except Representative Littlejohn ever saw it before it was introduced. No doctor was consulted in the drafting of it. It is being misrepresented by advertising agencies and others as a 'formula disclosure' bill. There is not a line in it compelling the disclosure of any formula. The bill simply provides that manufacturers of proprietary remedies shall register the names and furnish a sample of their product to the Dairy and Food Commissioner. This saves the state the expense of traveling inspectors to pick up the samples. It provides that each manufacturer shall pay to the department $10 for the first registration and $5 for each subsequent one to meet the cost of inspection and analysis. If the manufacturer wishes to avoid paying this inspection fee he can do so by disclosing his formula and thus save the department the expense of analysis, but if he pays the inspection fee he is not obliged to disclose the formula. No manufacturer of a meritorious proprietary remedy can reasonably object to the provisions of this bill. The objections of the manufacturers of fakes should be disregarded. The bill will make conditions better for the owner of a preparation of merit. The only restriction on advertising in the bill is that advertisements of remedies claiming to cure consumption, cancer and other admitted non-curable diseases, should be prohibited. All reputable newspapers already refuse this kind of advertising. Yearly the manufacturers of proprietary remedies take large sums from the people of this state; most of them are located outside the state and pay no state tax. Why should they object to paying a paltry fee to reimburse the state for its inspection of their products? The bill as drawn does not affect the retail drug trade and preparations made by the local druggist are specifically exempt under the terms of the act."

The physician who sent in the Thompson-Koch letter suggested that "proprietary and patent nostrum interests are in bad straits when they have to hide behind an advertising agency in Cincinnati in order to carry their point before the Michigan legislature." The Thompson-Koch Advertising Agency has, apparently, sent the newspapers of North Dakota telegrams practically identical with the letter printed above. In one of these sent us by a correspondent in North Dakota, a light touch is given by a postscript scribbled at the end of the message, to this effect: "They ought to pass a law prohibiting the sending of such fool messages as this."

The North Dakota papers have also received a shorter telegram from an advertising agency in New York warning the papers that the bill in question is the result of the "secret workings of Chicago's Doctors' Trust" and adds the magic suggestion that should the bill pass "no medicines or allied lines could be advertised in North Dakota."

It remains to be seen whether the druggists of Michigan and the newspaper publishers in North Dakota will jump through the hoop at the crack of the whip of the advertising agencies that are acting as ring-masters for the "patent medicine" interests.

ICHTHYTAR

Report of the Council on Pharmacy and Chemistry

Ichthytar was submitted to the Council with the claim that it was essentially similar to ichthyol in composition and superior to it in therapeutic properties. The statements that were submitted regarding its composition made it impossible to determine whether or not it was similar to or identical with ichthyol. No evidence was furnished in regard to its therapeutic value.

On June 19, 1916, the Szel Import and Export Company was advised that more specific information was desired in regard to the chemical composition of Ichthytar, particularly evidence to substantiate the claim that it is essentially identical with ichthyol and also evidence for the claim that Ichthytar is "far superior" therapeutically to the product "of a similar name manufactured by a certain Company in Germany."

No evidence was received by the Council either in substantiation of the claimed composition or the asserted therapeutic properties of Ichthytar. On the other hand, as late as Oct. 3, 1916, the claim was made that Ichthytar is the "equivalent of the so called 'ICHTHYOL' of German origin."

On the basis of the available information the Council held the claims regarding composition and therapeutic value unsubstantiated and Ichthytar ineligible for New and Nonofficial Remedies.

Correspondence

The Young Doctor and Health Insurance

To the Editor:—In THE JOURNAL, Feb. 24, 1917, p. 651, I note a letter from Dr. Emmons under this title in which he speaks of Dr. Lambert's "excellent paper" on the subject of health insurance. He expatiates on the impossibility of making a living such as is due the modern graduate in medicine under present conditions, owing to low prices and strong competition of older men in the business, and inquires whether the proposed health insurance enactment would not be a splendid opportunity for the modern graduate, professionally and financially. He pertinently asks whether the public will receive proper treatment under such a measure. He further suggests that after from five to ten years of service the young physician engaged in public health insurance work might transfer to private practice of a more paying nature and release this work to younger men coming out of the colleges.

As this is the most talked of and important theme before the medical profession, and would have the same importance in the minds of future patients if they were acquainted with the propositions before several state legislatures on the subject of health insurance, I wish to make a few statements and ask a few questions for the general good and welfare.

Compulsory health insurance, as exemplified by the Mills bill, about to be considered by the New York state legislature, is similar to the health insurance measures enacted in England and Germany, where the members of the medical profession were markedly reduced financially and many of them completely beggared. How is this process of practicing to increase the finances of doctors, young or old? The Mills bill practically provides for the extension of lodge work, as can be verified by carefully perusing Sections 15 and 63, and for maternity work on the same line of precedure, as shown by Section 13.

Can any one honestly state that contract practice, as exemplified at the present time in lodges and through the corporation doctor, is a good thing for the public or the physician?

If through the proposed measure the panel physicians receive twice as much as the German physicians received under the compulsory health act, or a capitation pay of $3 a year, and could have the maximum number of patients to treat allowed under the law, they would be able to make something like $3,000 a year for making somewhere in the neighborhood of 17,000 personal consultations a year, allowing for the ten days' sickness averaged by workmen and 2,000 extra calls on account of women and children being more in need of medical attendance than men, and considering the office calls that would necessarily arise from such an amount of work to be at the rate of fifteen per day. This would average the physician somewhere from 15 to 18 cents a visit, house and office, and keep him at work night and day.

Would twice this amount remunerate the young man from college, and would this sort of experience fit him to do careful, scientific work in after years?

I should like to ask if personal choice of a physician (the free birthright of an American) and payment by visitation, or some method giving a living fee, are not fundamental principles in the practice of medicine. Both of these funda-

mental principles are violated in the Mills bill. While there is mention of "reasonable free choice of physician," the provision of funds to be raised by syndicates employing 250 or more men would nullify such free choice, and furthermore the extension of present society funds would have the same effect, so that a large number of the people to be affected by the measure would be deprived of their personal wishes in this respect. Concerning the remuneration of the physician, there is nothing more to be said than is mentioned above.

Shall the profession give its acquiescence or approval to a method of practice which promotes the loss of the injured man's rights, as in the case of farming out a crowd of men to be treated medically, so that the company doctor and the company lawyer can be on the ground first in case of accident?

Shall we sanction the passage of any measure that on the surface appears to be paternalistic, class legislation, benefiting a few at the expense of the many, without submitting it to a referendum and giving the physicians and their patients a chance to discuss the terms of the law and the probable benefits to be derived from its adoption?

This is the most important measure that has come before the public for a great many years, as it affects about 80 per cent. of the population and is alike important to the doctor and his patients.

We can hardly afford to enact such a measure for the benefit of a few physicians who will hold fine salaried offices, as provided for in the Mills bill in the case of the commissioners and their assistants, and to fill the pockets of a lot of political henchmen who will be sure to benefit by the creation of a machine having at its disposal something like three hundred million to spend for its beneficiaries, a considerable portion of which sum would undoubtedly be used up before it reached the poor workman for whom it is intended, unless this political mechanism worked very different from the routine business of managing political affairs.

Would it not be well for the medical profession to turn constructive and make a counter proposition that would be more adequate to suit the mutual needs of the doctor and patient than is offered by the proponents of health insurance laws now before the different state legislatures?

JOHN V. WOODRUFF, M.D., Buffalo.
Chairman, Committee on Economics, Medical Society of the County of Erie.

Compulsory Health Insurance

To the Editor:—Referring to the letter of Mr. John B. Andrews, on this subject, THE JOURNAL, March 3, 1917, p. 729, I plead guilty to the exercise of poor judgment in quoting an estimate which I had no means of verifying; however, my reference was given. Mr. Andrews states no authority for his figures. It is to be hoped that they are correct. The statement that the British plan permits "free choice of physician" is hardly true, as that plan does permit choice of panel physicians, which is a far different thing to American interpretation. The one material point which I have wished to make is misunderstood by your correspondent, in his closing paragraph. I would not wish preventive medicine to supply "the same medical care as that offered by health insurance," but I do recognize that it has given and can give so much better service as to remove all reason for the makeshift of health insurance. A worker "left without resources" is one without either money or short time credit. This state occurs chiefly in the poorest paid and least thrifty class of workers. These men in their faulty habits of living and their invitations to disease can never be materially changed through health insurance. They can be materially changed through enlightenment and continued supervision. This contention is based on truth and a knowledge of conditions. That its promulgation should prompt a critic to endeavor to hoodwink the medical profession with the assumption that "physician" and "panel physicians" are synonomous terms leads to a query as to the identity of the critic. I would refer all men interested in this point to the remarks of Dr. C. E. Mongan before the Council of the Massachusetts Medical Society, *Boston Med. and Surg. Jour.*, Jan. 4, 1917.

W. D. CHAPMAN, M.D., Silvis, Ill.

Compulsory Health Insurance

To the Editor:—The educational campaign of the advocates of compulsory health insurance has aroused much thought and discussion. Contrary to the course of events in European countries, the medical profession has been aroused in America before any measure has been placed on the statute books. This is fortunate, for the working of any health insurance scheme falls directly on the physicians and tends to change the fundamental basis of the practice of medicine from a personal relation to a corporate or commercial one. Whether this is a desirable change should not be decided hastily.

Wherever health insurance is in operation, the quality of the medical insurance work tends to become poorer, owing to an overworked and underpaid profession. Nothing has yet been brought forward which proves conclusively that the same thing will not happen in the United States. Figures of any kind in regard to medical fees under the proposed health insurance scheme are almost impossible to obtain from its advocates. It has been said that fees may be twice those of the English system. The highest figures obtainable work out to about 40 cents a call. Now physicians as a general rule consider their fee a secondary matter, and their present apprehension is for the quality of service quite as much as for their personal incomes. People get about what they pay for, and value it accordingly. The medical profession does not wish to become a 40 cent profession commanding 30 cents' worth of respect, nor does it wish to see the evils of lodge and contract practice extended.

Is not health insurance an attempt to supplement an inadequate wage, and if so, is there any reason why the burden of it should fall on the medical profession? It is fundamentally an economic question. The average wage is not sufficient for a workman and his family to live on in health; neither can they afford to be sick. To this premise all investigators subscribe. But the remedy! Shall it be a living wage, or various expedients to quiet the social unrest, such as hiring physicians, at a similar inadequate wage, to treat ills that could largely be prevented or cared for in the usual way, if the worker were paid a healthful wage? "Health is purchasable."

General Gorgas tells how good pay, which enabled the workmen in the Panama Canal Zone to live properly, did more to raise the health of the zone community to its very high standard than all the other sanitary measures. Real public health is impossible without adequate wages.

No one realizes more sympathetically than physicians the need for better health and care in sickness among the laboring classes. But health insurance, as at present advocated, merely spreads the burden. We must go to the root of the trouble, and secure for every man, woman and child his right to health through his ability to purchase the requisites for vigorous well-being.

ALBERT BOWEN, M.D., Rochester, N. Y.

Medical Services in Social Insurance

To the Editor:—In the last issue of THE JOURNAL for the year 1916, you call for discussion on the compulsory health insurance problem. You also call attention to the fact that the council of the New York State Medical Society endorses the plan of the American Association for Labor Legislation.

It is increasingly apparent that the physicians of New York state are not inclined to agree with the council in commending the plan of the American Association for Labor Legislation.

Discussion of this subject in Buffalo has brought out clearly the main point of contention, namely, the provisions under the act for employment and payment of physicians.

Physicians as a class are only academically concerned with health insurance, considered from the insurance point of view alone. I believe the majority of physicians are heartily in favor of adequate compensation for the laboring man during illness. The question which I and doubtless most of the profession will ask is this: Why must the physician be dragged or dragooned into the measure at all? Why not insure the laboring man according to the best advice of the

actuaries and leave the question of medical attendance absolutely open? The physician would be pleased to know that his patient is being well compensated during illness, giving reasonable assurance of payment for medical and surgical services in many cases in which without insurance no payment whatever would be expected. If home or hospital care be called for, that too might be provided for in the act by a more generous compensation, commensurate with the needs of the case.

The act might still provide for the appointment of official medical examiners or diagnosticians to protect insurance funds against malingering and conspiracy.

I have read any quantity of discussion on the question of health insurance, but so far have seen no measure offered which does not in some way propose to regulate medical practice.

As an afterthought, it does not seem practicable to attempt, as this measure obviously does, broadly to regulate or restrain quackery and malpractice by this indirect means. If quackery remains a problem in spite of present legislation, surely it will not be controlled by any form of health insurance legislation.

Joseph S. Lewis, M.D., Buffalo.

Another Scheme for Health Insurance

To the Editor:—Allen County, Kansas, has had a good deal of trouble regarding the care and compensation for the county poor. Last December I was elected president of the county medical society, and immediately proceeded to put in operation a plan which seems to have solved the problem satisfactorily to every one. I contracted with the county commissioner to care for the pauper practice for a fixed sum per month. As county health officer, all calls come to my office. They are then distributed among the members of the society. We have a scale of points, and each county service is counted so many points. The accompanying card is issued for each patient, and the funds are divided according to the points received by each physician.

J. S. Sutcliffe, M.D., Iola, Kan.

ALLEN COUNTY MEDICAL SOCIETY

This card entitles.....
or family, Residence.....
to free medical treatment for one week from date. Should further treatment be required, a new order must be obtained from
Date..... .....
COUNTY HEALTH OFFICER

This is to Certify that I have rendered the following services to.....
Diagnosis: .....
State nature of services rendered and dates.....
.....
Number of points to be filled in by Secretary.....
Dr.....

Note: This card must be presented to the secretary of the medical society not later than three days after the regular meeting, following above dates; otherwise no credit will be allowed.

Bacterial Findings and Their Relationship to Pyorrhea Alveolaris and Interstitial Gingivitis

To the Editor:—In an article on this subject (The Journal, Feb. 10, 1917, p. 414), Dr. A. W. Lescohier made a reference to my article on the subject which needs some explanation.

According to Dr. Lescohier, there appears to be a difference in the bacterial findings in chronic alveolar osteomyelitis (pyorrhea) reported by me and those reported by other observers: my findings would place the pneumococcus as the predominating organism in pyorrhea, while the other observers report the streptococcus to be the predominating organism found.

The fact in the matter is that the organisms found by me and referred to as pneumococcus in chains or *Streptococcus lanceolatus-pneumoniae* are one and the same organism found by Brown and those reported by Hartzell and referred to by them as the *Streptococcus viridans*. The difference comes in, not in the findings, but in the nomenclature of the streptococcus. In an article entitled "Opsonic Therapy in Pyorrhea Alveolaris" (*Boston Medical and Surgical Journal*, Jan. 13, 1910), I called attention to the reason for my referring to those diplococci in chains as pneumococci in chains or *Streptococcus lanceolatus-pneumoniae*. I then gave the following two reasons for referring to them as pneumococci in chains which I wish to repeat here:

1. The individual diplococci making up the chain have their long diameter corresponding to the long diameter of the chains, while the true *Streptococcus pyogenes* has the long diameter at a right angle to the long diameter of the chain.

2. The chains after being shaken up for purposes of standardizing the vaccine were found to be broken up readily into their constituent diplococci; appearing morphologically like typical pneumococci, while the chains of the true *Streptococcus pyogenes* cannot be broken up readily, if at all.

In my article to which Dr. Lescohier refers, I have always spoken of the pneumococcus as found in this disease as the *Streptococcus lanceolatus-pneumoniae* or pneumococcus in chains. To my mind the *Streptococcus viridans* of other authors as reported found in this disease is nothing more than a streptococcus approaching the pneumococcus type rather than the true *Streptococcus hemolyticus* or *Streptococcus pyogenes*. Rosenow's transmutation of the true streptococcus into a true pneumococcus, and vice versa, further emphasizes the close relationship of the two organisms.

I trust that this will definitely explain that we are not finding different organisms in chronic alveolar osteomyelitis (pyorrhea alveolaris), but rather that some observers prefer to call the same organism *Streptococcus viridans* while I preferred to call it pneumococcus in chains.

Leon S. Medalia, M.D., Boston.

Practices of Reserve Medical Officers in Time of War

To the Editor:—Should the country ever be engaged in war, the Medical Department of the Army, in calling reserve officers to the colors, wishes to cause as little hardship and sacrifice to the reserve medical officers as may be consistent with the needs of the country. With this end in view, the department desires that you bring to the attention of the profession at large the necessity of the city, county and state medical societies organizing for the purpose of taking care of the practices of the officers of the reserve who respond to a call for service. In England this plan has proved of great benefit. The idea of the department is that the profession should organize on a similar basis.

For example, should Dr. Jones be called to the colors, the local medical society, through its members, would take care of his practice during his absence. On his relief from active duty, his practice would be returned to him intact. Such a plan will cause no unnecessary hardship on the officer responding to a call for service, while the absence of such a plan would penalize the officer who gives his service to the country in a crisis. The department appeals to the patriotism of the profession to protect the interest of those of the profession who may be called to duty in war.

Robert E. Noble, M.D., Washington, D. C.
(For the Surgeon General.)
Major, Medical Corps, U. S. Army.

Long Nitrous Oxid-Oxygen Anesthesia

To the Editor:—In The Journal, Feb. 17, 1917, under this caption, Dr. J. R. McCurdy says, "As far as my search of the literature has disclosed, there is no case on record as long as the one herewith reported—four hours and forty minutes."

In *Surgery, Gynecology and Obstetrics*, December, 1913, p. 759, I said, "I have administered it (nitrous oxid-oxygen) in point of time from a few seconds to over five hours." The "over five hours" was five hours and five minutes, to be exact. I did not report this case in detail, as there was nothing special about the anesthesia except its length, and Gatch had previously reported a case almost as long—five hours (The Journal, Nov. 11, 1911, p. 1593).

R. C. Coburn, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

DERMATITIS DUE TO LAMPBLACK

To the Editor:—I wish to know whether or not there is any recent literature relating to the effect of naphthalene on the skin in causing acute or chronic dermatitis. For several years I have had charge of the surgical work of the employees of the local gas company, which manufactures its gas from California fuel oil. One of the by-products of this manufacture is lampblack which, by pressure and by the addition of a small amount of fuel oil, is later made into briquets. The hot lampblack as it comes from the furnaces is shoveled and otherwise handled by some of the employees. Last summer, during the hot weather, several of these men developed on their hands and arms what appeared to be a dermatitis. The condition was not serious and cleared up promptly when they did not come in contact with lampblack and when a mild ointment was used. The chemist of the gas company thought the effect was due to the fumes of certain hydrocarbons which were given off by the hot lampblack, naphthalene or some similar hydrocarbon being the principal factor. Apparently this condition develops only when the men are hot and perspire freely, which might suggest that naphthalene, etc., might be dissolved in the perspiration, thereby causing irritation, as I have not seen cases develop during the winter months.

I have just read Kober and Hanson's book on "Vocational Diseases," and can find no specific statement on this general point. I should therefore greatly appreciate any literature you can suggest, or any idea which can be utilized to prevent further recurrence.

OTIS B. WIGHT, M.D., Portland, Ore.

ANSWER.—Employees in machine shops, factories, etc., in which the workmen come in contact with lubricating oils, and especially when the oils are used automatically over and over again, are particularly liable to suffer with dermatitis and furunculosis. This condition is intensified with the use of the higher hydrocarbons derived from the crude oils, such as benzol and naphthalene. Other substances, such as turpentine, anilin, mercuric chlorid, ether and alcohol, act in a similar manner. The British inspector of factories, in his annual reports for the years 1914, 1915 and 1916, refers to the occurrence of furunculosis and dermatitis among employees working in crude oils, and especially in the manufacture of gas. Heat is another causative factor in dermatitis, as has frequently been observed among bakers and stokers. A third possible cause is mechanical irritation of the skin. As a preventive measure it has been suggested that a small quantity of some coal tar antiseptic be added to the lubricating oil.

Further information is given in the Annual Report of the Illinois Department of Factory Inspection for 1916, which tabulates and describes the various occupational dermatoses, and in the Reports of the British Inspector of Factories and Workshops for 1913 and 1914.

SOLUTION OF RED MERCURIC OXID—INTRAVENOUS INJECTION OF POTASSIUM IODID

To the Editor:—1. I am desirous of giving a solution of red mercuric oxid intravenously. Please suggest a method by which I can bring the mercuric oxid into solution so that it can be used intravenously.

2. Would it be possible to inject potassium iodid intravenously in doses of 1 grain diluted with 3 c.c. of water?

Please do not publish my name. F. A. M.

ANSWER.—1. Mercuric oxid is brought into solution by the addition of sodium iodid. The resultant solution is alkaline and contains the mercury as sodium mercuric iodid. The following reaction may be assumed to have taken place: $HgO + H_2O + 4NaI = Na_2HgI_4 + 2NaOH$. We would suggest the following formula:

Mercuric oxid	1
Sodium iodid	4
Distilled water	q. s. ad 100

Of the solution, from 1 to 3 c.c. are injected daily or every second day. One c.c. corresponds to 10 mg. or about ⅙ grain of mercuric iodid.

We may also refer you to an article by G. P. Grume on "The Intravenous Injection of Mercury," THE JOURNAL, Dec. 19, 1908, p. 2155.

2. The dosage mentioned would present no special dangers. It is understood, of course, that the injections would be made slowly, and with the usual aseptic precautions, etc.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

ARIZONA: Phoenix, April 3-4. Sec., Dr. John Wix Thomas, 306 Goodrich Bldg., Phoenix.

CALIFORNIA: Los Angeles, April 10. Sec., Dr. Charles B. Pinkham, 529 Forum Bldg., Sacramento.

COLORADO: Denver, April 3. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.

CONNECTICUT: Regular: New Haven, March 13-14. Sec., Dr. Charles A. Tuttle, 196 York St., New Haven.

CONNECTICUT: Homeo.: New Haven, March 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

DISTRICT OF COLUMBIA: Washington, April 10. Sec., Dr. Edgar P. Copeland, The Rockingham, Washington.

IDAHO: Boise, April 3. Sec., Dr. Charles A. Dettman, Burke.

MAINE: Portland, March 13-14. Sec., Dr. Frank W. Searle, 776 Congress St., Portland.

MASSACHUSETTS: Boston, March 13-15. Sec., Dr. Walter P. Bowers, Room 501, No. 1 Beacon St., Boston.

MINNESOTA: Minneapolis, April 3-6. Sec., Dr. Thomas S. McDavitt, 741 Lowry Bldg., St. Paul.

MISSOURI: St. Louis, March 26-28. Sec., Dr. J. A. B. Adcock, 325 E. High St., Jefferson City.

MONTANA: Helena, April 3. Sec., Dr. W. C. Riddell, Helena.

OKLAHOMA: Oklahoma City, April 10-11. Sec., Dr. Ralph V. Smith, 502 Daniel Bldg., Tulsa.

PORTO RICO: San Juan, April 2. Sec., Dr. Onevedo Baez, San Juan.

RHODE ISLAND: Providence, April 5-6. Sec., Dr. Gardner T. Swarts, State House, Providence.

UTAH: Salt Lake City, April 2. Sec., Dr. G. F. Harding, 407 Templeton Bldg., Salt Lake City.

WYOMING: Laramie, March 14-16. Sec., Dr. H. E. McCollum, Laramie.

Kansas October Report

Dr. H. A. Dykes, secretary of the Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Oct. 10-12, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 8, of whom 7 passed and 1 failed. Twenty-four candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Northwestern University		(1916)	87
Rush Medical School		(1916)	80
Tulane University of Louisiana		(1914)	85
St. Louis University		(1916)	84
Southwest School of Medicine and Hosp.		(1916)	84
Columbia University		(1916)	82
University of Texas		(1912)	80
	FAILED		
University of West Tennessee		(1915)	62

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Atlanta Medical College		(1915)	Georgia
Georgia Coll. of Eclec. Med. and Surg.		(1893)	Arkansas
Chicago College of Medicine and Surgery		(1912)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago		(1891)	Missouri
University of Illinois		(1916)	Illinois
Louisville Medical College		(1890)	Kentucky
University of Louisville		(1911)	Tennessee
Coll. of Phys. and Surgs., Baltimore		(1903)	S. Carolina
American Medical College		(1910)	Arkansas
Barnes Medical College	(1906) Oklahoma;	(1908)	Nebraska
Missouri Medical College		(1880)	Missouri
National University of Arts and Sciences	(1915, 2)		Missouri
Northwestern Medical College		(1890)	Missouri
St. Louis University	(1915, 2)		Missouri
University Med. Coll. of Kansas City	(1898)	(1912)	Missouri
Washington University		(1915)	Missouri
John A. Creighton Med. Coll.	(1901) Iowa;	(1915)	Missouri
University of Pennsylvania		(1898)	Virginia
Marquette University		(1915)	Wisconsin

Michigan October Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports the written examination held at Lansing, Oct. 10-12, 1916. The total number of subjects examined in was 14; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 10, of whom 8 passed and 2 failed, including 1 drugless practitioner. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
George Washington University		(1916)	85.3
Detroit College of Medicine and Surgery		(1916) 78,	83.7
University of Buffalo		(1916)	85.4
Jefferson Medical College of Philadelphia		(1912)	88.5
Medico-Chirurgical College of Philadelphia		(1915)	80.6

Vanderbilt University	(1915)	84
University of Toronto	(1916)	78

FAILED

University of Arkansas	(1909)	77 *

* Conditioned in one subject.

Wyoming October Report

Dr. H. E. McCollum, secretary of the State Board of Medical Examiners of Wyoming, reports the written examination held at Laramie, Oct. 3-5, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 4, all of whom passed. Three candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Chicago College of Medicine and Surgery		(1916)	88, 80
Northwestern University		(1896)	75
University of Nebraska		(1914)	82

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Kansas Medical College		(1907)	Kansas
Barnes Medical College		(1908)	Illinois
John A. Creighton Medical College		(1896)	Illinois

Arkansas November Report

Dr. T. J. Stout, secretary of the State Medical Board of the Arkansas Medical Society, reports the written examination held at Little Rock, Nov. 14-15, 1916. The total number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The total number of candidates examined was 13, of whom 10 passed and 3 failed. Nine candidates were granted reregistration licenses by examination. Fourteen candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
University of Arkansas		(1916)	77.7
Loyola University		(1916)	88.2
Columbia University		(1914)	92
Meharry Medical College		(1912) 76.2; (1916)	75.4
Memphis Hospital Medical College		(1911)	75.2
University of Tennessee		(1913) 78.8; (1914) 75; (1916)	81.8
Vanderbilt University		(1915)	89.7

FAILED

Meharry Medical College	(1916)	*, *, *

* No grades given.

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Tulane University of Louisiana	(1898) Texas; (1915)	(1916)	Louisiana
University of Maryland		(1905)	Louisiana
Marion-Sims College of Medicine		(1901)	Louisiana
Meharry Medical College		(1916,2)	Tennessee
Memphis Hospital Medical College		(1909) (1912) (1913)	Mississippi
		(1911)	Tennessee
University of Tennessee		(1916) Tennessee; (1916,2)	Mississippi

West Virginia November Report

Dr. S. L. Jepson, health commissioner of the West Virginia Health Council, reports the oral, practical and written examination held at Parkersburg, Nov. 14, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 80. The total number of candidates examined was 13, of whom 11 passed and 2 failed. Seven candidates were licensed through reciprocity. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent.
Columbian University		(1900)	90.2
University of Georgia		(1916)	88.8
Chicago College of Medicine and Surgery		(1916)	85.6
Tulane University of Louisiana		(1906)	82.3
University of Maryland		(1915) 88.6; (1916)	82.6, 93.4
University of Cincinnati		(1916)	90.4
Western Reserve University		(1915)	87
Jefferson Medical College of Philadelphia		(1916)	89.4
Medical College of Virginia		(1915)	83.8

FAILED

Loyola University	(1916)	77.6
North Carolina Medical College	(1915)	76.3

College	LICENSED THROUGH RECIPROCITY	Year Grad.	Reciprocity with
Louisville Medical College		(1894)	Kentucky
University of Maryland		(1915)	Maryland
Columbia University		(1894)	Virginia
Leonard Medical School		(1903)	Virginia
Western Reserve University		(1913)	Ohio
Western Pennsylvania Medical College		(1902)	Penna.
University College of Medicine		(1912)	Virginia

Book Notices

THE PATHOLOGY OF NEPHRITIS AS ILLUSTRATED BY THIRTY-TWO CONSECUTIVE CASES. By William Ophüls, Professor of Pathology. Paper. Price, $1. Pp. 103, with 64 illustrations. Stanford University: Division of Pathology, Stanford University Medical School, 1916.

This reports a series of thirty-two cases of true diffuse glomerulonephritis, studied carefully at necropsy and with reference to the clinical picture of each case. It is an excellent example of the careful, valuable anatomic work in pathology which has been, on the whole, poorly developed in this country, where greater emphasis has always been laid on experimental methods, largely of necessity through our deplorable lack of necropsy material. No physician can look through Dr. Ophüls' monograph without having a better understanding of the steps in the development of the renal changes of nephritis, and perhaps a greater appreciation of the value of thorough anatomic study of even the common diseases. The author reaches these conclusions: Diffuse glomerulonephritis is a disease which may occur in acute, subacute or chronic form. The etiology of the acute and subacute forms is evidently to be found in bacterial infection, and this is quite probably true of the chronic form. The bacteria concerned are commonly, but not necessarily, members of the streptococcus family. It is probable that the continuance of the disease in the kidneys is due to the continuance of the infection in some often more or less hidden focus. It is suggested that one should look on the edema, the hypertension, the arteriosclerosis and certain uremic manifestations merely as being frequently associated with nephritis, rather than directly dependent on it. Quite conceivably these manifestations are the result of the fortuitous action on other tissues of the same cause which injures the kidneys.

ACUTE POLIOMYELITIS: ITS NATURE AND TREATMENT. Being the Lumleian Lectures Delivered at the Royal College of Physicians, London, 1916. By Frederick E. Batten, M.D., F.R.C.P., Physician to the National Hospital for the Paralyzed and Epileptic, Queen Square. Reprinted from *Brain*, Vol. XXXIX, 1916. Pp. 104. London: John Bale, Sons & Danielsson, 1916.

A competent medical man who is attending physician to the greatest neurologic hospital in the world and to one of the greatest hospitals for children is in a position to know a great deal about poliomyelitis if he cares to. That Dr. Batten has improved his opportunities is evidenced by this monograph. It covers every aspect of the disease from history and epidemiology to treatment, but neither too fully nor too technically for ready use by the general practitioner. Of especial value is the description of the different clinical forms. Among other things, we can strongly commend his treatment by means of celluloid splints with the affected part placed in the "zero position." It is to be hoped that American hospitals will adopt these light and strong splints. The method of making them is described in an appendix. The book is strongly commended to general practitioners and specialists.

THE MENTALLY DEFICIENT CHILD. Written Specially for School Teachers and Others Interested in the Educational Treatment and After-Care of Mentally Defective School Children. By Meredith Young, M.D., D.P.H., D.S.Sc., Chief School Medical Officer, Cheshire Education Committee. Cloth. Price, $1.50. Pp. 140, with illustrations. New York: Paul B. Hoeber, 1916.

The author of this little book, which is "especially written for the layman," is a physician and a "barrister-at-law"—judging from his work, we should say probably more barrister than physician. The book may be said to be a collection of hints regarding various aspects of mentally defective children, and there is no doubt that an intelligent teacher would find in it much to interest her and something of value. The author not infrequently makes the attempt to teach his lay readers medical or physiologic technicalities, and occasionally advises them to take on strictly medical functions. This is a mistake because a lay reader practically always takes a distorted view of the subject and his efforts are apt to be not only ineffectual but perhaps harmful. The chapter on the Binet-Simon tests will be helpful to any teacher trying to decide whether or not a given pupil should be sent elsewhere for a real examination.

Medicolegal

Duty Owed to Sanatorium or Hospital Patients

(Durfee vs. Dorr et al. (Ark.), 186 S. W. R. 62)

The Supreme Court of Arkansas reverses a judgment rendered on a verdict directed in favor of the defendants, physicians who, in connection with their practice of medicine, operated a sanatorium, and who were sued by the plaintiff, in his own right and as administrator of the estate of his son on whom an operation for abscess of the liver had been performed by the defendants at their sanatorium, it being alleged that the patient had one night, thereafter, walked out of an upstairs door of the sanatorium and fallen over the banisters, from the effects of which he had died. The court says that the defendants made no attempt to explain the occurrence, but presented the theory that the patient had walked down the stairs and out of the building, and had stumbled and fallen over a pile of grass from 6 to 8 inches high. This court was, of course, not concerned about the plausibility of any theory which excused or tended to excuse the defendants of the charge of negligence. It had only to consider whether under the evidence offered the jury would have been warranted in finding that the defendants were guilty of a breach of their duty to the patient which resulted in his injury. The principle of law which controlled is one which has been applied to many situations. The keeper of a hospital is liable for damages if he fails to perform some duty which he owes to the patient, and the patient is injured as a result of this failure. The extent and character of this duty depends on the circumstances of each particular case. A jury would be warranted in assuming that a patient will need some care and attention from the very fact that he placed himself, or is placed, in the institution, and as the defendants were in sole charge of this sanatorium, and the plaintiff's son was their patient, it was their duty to give him reasonable care and attention and to have that knowledge of the necessities of his case which would result from this care and attention and from the possession of ordinary skill in his treatment, there being no representation here on the defendants' part of extraordinary skill. The plaintiff had not contracted for the services of a special or individual nurse, but that fact did not absolve the defendants from the discharge of their duty to the patient. It is true it would have been the duty of a special nurse to give the patient individual attention, but it was nevertheless the duty of the defendants to see that he had such attention as his condition apparently made necessary. Here was a man who was desperately sick; the electric lights were off (after an unusual flood) and the building was in darkness, except for the light of the moon; doors were unlocked and the patients apparently could go about as they pleased or as their delirium carried them without attracting the attention of the nurse or nurses who were supposed to be on duty; and it might even have been found that the nurse who finally appeared on the scene had been asleep. The court thinks the case presented the question for the jury to determine whether the defendants discharged their duty to a patient who, according to their own contention, was in extremis.

Bar on Testimony of Physician Suing After Death of Patient for Services

(Kennedy vs. Mulligan et al. (N. Y.), 160 N. Y. Supp. 105)

The Supreme Court of New York, Appellate Division, First Department, reverses a judgment obtained by the plaintiff, and grants a new trial, because the plaintiff, a physician, who had presented a claim for $2,800 for services alleged to have been rendered to an incompetent and after the death of the latter had sued his executors, was permitted to testify that he had attended the incompetent professionally, had a note of a visit from a certain party on a certain date, and on the same date went to Yonkers and there saw and examined the patient. The court says that it seems clear that the testimony in this case was objectionable. Medical attendance involves a transaction as well as communications between the physician and the patient. On the death of a patient, testimony from him as to the facts of that attendance is rendered impossible, and under such circumstances it seems clear that the policy of the provision of Section 829 of the code of civil procedure prohibits testimony by the other party to the transaction. The rule stated in the case of *Griswold* vs. *Hart*, 205 N. Y. 384, 98 N. E. R. 918, which is the latest exposition of the scope and intent of this code provision, is that whatever a person "derives from the personal presence of the deceased by the use of his senses is a communication from the deceased to him within the meaning of the statute." Again, the case says that the object of the statute was "to retain the equality between the parties which otherwise, under the new rule, would have been destroyed by the death of the deceased." Moreover, the objection was sufficient when the question was raised at the beginning of the evidence, and it was apparent that the trial court intended to rule that the section was not applicable, although other like evidence was afterward admitted to which the objection was not made.

Society Proceedings

COMING MEETINGS

Alabama State Medical Association, Montgomery, April 17-20.
Am. Assn. of Pathologists and Bacteriologists, New York, April 6-7.
American Gastro-Enterological Assn., Atlantic City, April 30-May 1.
Arizona Medical Association, Douglas, April 17-18.
Arkansas Medical Society, Little Rock, May 1-3.
California State Medical Society, San Diego, April 17-19.
Georgia Medical Association, Augusta, April 18-20.
Kansas Medical Society, Salina, May 2-4.
Louisiana State Medical Society, Alexandria, April 17-19.
Maryland Medical and Chirurgical Faculty, Baltimore, April 24-26.
Missouri Valley Medical Society, Keokuk, Ia., March 22-23.
New York State Medical Society, Utica, April 24-26.
North Carolina State Medical Society, Asheville, April 17.
South Carolina Medical Association, Spartanburg, April 17-19.
Tennessee State Medical Association, Nashville, April 3-5.

MEDICAL SOCIETY OF THE COUNTY OF NEW YORK

Meeting held Jan. 22, 1917

The President, DR. J. BENTLEY SQUIER, in the Chair

Medical Legislation

DR. FREDERIC E. SONDERN: I have recently been charged with the statement that our society evinced no interest in the welfare of the physician until three or four years ago, and that in direct consequence of this we had lodge practice, and the dispensaries treating patients gratuitously who could afford a physician's fee. Doubtless this was intended as a jest, as both lodge practice and the dispensary which cared for undeserving persons could not exist without the physicians who attended them, and the places in both were usually eagerly sought by medical men. If the profession as a whole objected to these supposed abuses of its rights, why did it lend its services in their support? Appearances indicate that we are on the eve of a new era. Every succeeding session of our state and national legislative bodies shows evidence of investigation, regulation and socialization in medicine. It is our duty, individually and collectively, to be citizens of this great commonwealth in every sense that the term implies. Unless the medical profession exercises its duty in this respect, it, and not this or any other society, is to blame for legislation contrary to its interests.

SYMPOSIUM ON COMPULSORY HEALTH INSURANCE

Needs and Possibilities

PROF. IRVING FISHER, Yale University, President of the American Association for Labor Legislation: Compulsory health insurance is the most prominent public health movement today. If the bill now presented does not do justice to the medical profession, its members should enter a protest. I can assure you that you will have the cooperation of every

friend of the medical profession in your protest; at the same time you should endorse compulsory health insurance. It has certainly stood the test of time in Europe, and ours is the only great industrial country today that does not have some form of compulsory health insurance. Thus the only European countries which, like the United States, are without any general system are Italy, Spain, Portugal, Greece, Bulgaria, Albania, Montenegro and Turkey. For four years an able committee of the American Association for Labor Legislation has been studying American conditions and foreign health insurance acts and constructing a standard bill. We have now in the Mills bill the most complete measure yet introduced anywhere in the world. I have been listening to objections to the bill from representatives of 5 and 10 cent insurance, and I have no doubt that there are other private interests which will oppose the bill and it might be that before it was passed it would be altered to suit private and political interests. I hope that private medical interests will not be behind any such step. The American Association for the Study and Prevention of Tuberculosis, and many affiliated organizations have helped the movement. A number of charitable organizations have also favored the idea, and some forty-five other organizations of various natures. Several international unions, including the International Typographical Union, have gone on record as favoring it, and likewise many state federations of labor. Many individual labor leaders of prominence definitely approved it. The bill proposes obligatory insurance of substantially all working men and women. In case of sickness the insured will receive medical or surgical service, medicines, nursing and a cash benefit amounting to two thirds of the weekly wages of the insured for the period of illness up to six months. Maternity benefits are provided for childbirth, and funeral benefits for death. There are two reasons for enacting such a bill. There is the need of indemnification against loss and the need of diminishing the loss itself. Indemnification is the essence of the insurance principle. It is well known that the workman's compensation has had the effect of greatly stimulating industrial methods in accident prevention. According to Dr. Zacher's experience in Germany, twelve years are added to the worker's life span during thirty years of health insurance. This prolongation of life is at the rate of forty years a century, the highest rate of increase known in any country or any period of time. Aside from the reduction of destitution, health insurance tends to raise slightly the entire wage level, since the wage level is influenced by industrial productivity and anything which raises the physical stamina of the working men increases their productivity.

The Economic Disadvantages of Compulsory Health Insurance

MR. WILLIAM GALE CURTIS, Chairman of the Educational Committee, Insurance Economics Society of America: To economize means to save, and any plan for compulsory health insurance must either save the money loss or else save the time loss which is the equivalent. The plan at present contemplates replacing a few of the wage earner's lost dollars, the state contributing part, the employer part, and the wage earner standing the balance. This is replacement and not saving. Under compulsory health insurance one wage earner out of every ten would fail to pass a physical examination, and when rejected once other employers would turn him away. If one supposes that three out of every ten discards are refused work everywhere, it would mean the loss of 300 working days each year to each permanent outcast. Instead of making a saving of the time already lost, the plan presents additional waste. In addition to the panel physicians there must be special medical directors associated with the carriers, which adds to the expense. Economic disadvantages, however, are not all measured in money. The loss of the American spirit, individualism, thrift and self-dependence are all economic disadvantages. This plan is undemocratic, un-American and paternalistic. Compulsory thrift would be more feasible, more reasonable and more economical. The plan is unconstitutional, since it would tell a large number of persons that they are incompetent and must become wards of the state; this is to deal a body blow at their most precious possession—personal dependence and independence. This country is above the need of any form of compulsory insurance. The conditions in Europe that gave rise to this plan do not exist here. Every state and city has its departments of health, housing, factory inspection, smoke abatement, sewers, water, streets and alleys, garbage disposal, food inspection, etc., and the public is being taxed for their maintenance. These departments should be brought to their highest efficiency and made to do their work, and then two thirds of the present wage loss could be saved.

The Tentative Draft

SAMUEL J. KOPETSKY, Chairman of the Committee on Medical Economics of the Medical Society of the State of New York: Our committee has investigated the subject of compulsory health insurance thoroughly; we have made it our object to see that under the proposed bill for compulsory health insurance the patient shall get a dollar's worth of service for every dollar expended, whether the dollar comes from the employer, the state or a fellow working man's pocket. If the present compulsory health insurance bill is only a step toward the mitigation of present abuses of medical charity it is worthy of consideration. The panel physician who treats a man and his family when that man is earning only $25 a week may continue to keep the practice of that family when the man has raised himself to a more lucrative position. This confidential relation between physician and patient must be retained. To meet this situation it is advisable to have salaried physicians employed by the carriers of the insurance who shall look after their interests. Stress has been laid by both speakers on the importance of the prevention of disease. This has also been recognized by those who have drawn up the tentative draft, and it has been provided for by requiring that the local health officers should be members of the local committee, and their representation is provided for on the state medical advisory board. Only when a dispute that may arise between physician and patient, between physician and physician, or between physician and carrier cannot be settled by the local committee will it be referred to a superior committee with its quota of medical men. It is probable that almost all disputes will be settled by the local committee. There is no doubt that there are some flaws in the bill as it now stands, and if any one has further constructive suggestions to offer, the legislative committee will be very glad to listen to them. We have studied the problem and realize that in different localities different problems must be met, and it is for this reason that local committees are so constituted that they can deal with conditions in their own neighborhoods. The one essential thing is that this subject shall be thoroughly discussed at the present time and that we shall find out what we want and stand before the public as a unit on matters pertaining to compulsory health insurance. We shall then be in a position to demand certain things in the interest of the public and of the profession.

A Criticism of the "Tentative Draft" and Its Promulgation

DR. EDEN V. DELPHEY: The proposition advanced by the American Association for Labor Legislation in the "tentative drafts" will, if adopted and enacted into a statute law, revolutionize the practice of medicine so that the physician will professionally cease to be an individualist and will be but a cog in a great medical machine. In this case there should have been a publicity campaign conducted in such a manner as to reach all the classes of persons affected; this could have been done by circulars and newspaper articles on both sides of the question, by public hearings, and by communications with all the medical societies and other social bodies personally or otherwise interested in the subject, in order to get a full and complete comprehension of how the great mass of the people would be affected by the proposed law and whether and in what particular they approved or disapproved of it. If it is positively determined that health is a state asset, then the best and simplest way is for the state to take over the plan of health insurance and insure every man, woman and child, whether or not they are employed, and whether or not they pay any share of the cost. It would be

more inclusive, more effective, more simple and less expensive than the one advocated by the American Association of Labor Legislation with its heavy overhead expenses. The state furnishes educational advantages, and fire and police protection; why not furnish this also? It is an axiom in political economy that no matter who pays the cost in the first instance, it comes out of the state in the end.

Meeting held Feb. 15, 1917

The President, DR. J. BENTLEY SQUIER, in the Chair

Discussion on Compulsory Health Insurance

DR. ALEXANDER LAMBERT: In discussing any health insurance plan it is well to get before our minds what is proposed in the present bill now before the legislature. Perhaps the best way to do this is by a comparison with the working men's compensation laws. It has been shown that in the course of a year about 6 per cent. of working men have accidents, and it is on this basis that rates and premiums are figured. The experience of the profession in some states, especially Massachusetts and New York, under workmen's compensation laws, has made the profession realize that its interests were not safeguarded, and these laws were passed before the profession realized its duties and responsibilities under the law. It has also been observed that under the workmen's compensation laws today inadequate care is provided to really seriously injured persons. But it must be remembered that the employer bears the entire liability and that he is running an industry for profits. It is to be expected that under these circumstances he will wish to pay the physician as small a fee as is possible. We now have the opportunity to see that the medical profession is properly protected before a compulsory insurance act is passed. A health insurance scheme to be successful must be locally controlled. Mr. Curtis has described compulsory health insurance as simply lifting money from one pocket and putting it into another, and argues that this is of no economic advantage. Mr. Curtis is president of the National Casualty Company, and the trouble is that the plans for compulsory health insurance have left the insurance companies out in the cold. Under the English plan a physician's clientele may be scattered over a large territory. This we have tried to avoid by districting the state in such a way that no district shall have less than 5,000 persons who are subject to compulsory health insurance. We do not claim that compulsory health insurance is a cure for poverty, for shiftlessness, or for pure cussedness, but it will provide a means whereby the working man can be carried over a period of illness without being plunged into debt and destitution. It will not interfere in any way with our present laws and provisions in relation to preventive medicine, but would weld these various agencies together and make them more effective.

DR. EDWARD D. FISHER, Chairman of the Health Insurance Committee of the Medical Society of the County of New York: My committee has directed its attention toward the general idea of health insurance rather than to the details through which it was to be carried out; that part we left to others. In our report to the county society we did not enter into details, but left that to the chairman of the Committee on Economics of the Medical Society of the State of New York. We did not in our report endorse the proposition but simply suggested that if the bill became law we would insist that there be full medical representation on all boards. In other words, we took a neutral position. The Mills bill which was given us to consider was the first Mills bill and did not provide proper medical representation. As many physicians would not get on the panel, the question comes of how compulsory health insurance would affect the general practitioner and his fees. Some think these would be interfered with, and others think not. I do not think the medical profession has studied the many difficult problems that are involved very deeply. Such a study is beset with many difficulties. It is difficult to get the individual practitioner to devote much time to this rather complicated and difficult subject.

DR. WILLIAM S. GOTTHEIL: A discussion of motives for favoring or for opposing this compulsory health insurance law is out of place here. It has been said from this platform that it would be disgraceful for physicians to discuss this measure from the standpoint of their personal interests alone. I am interested in it and discuss it from that standpoint alone. Who is to pay for this health insurance? We doctors most of all, partly with the rest of the community as citizens and partly and much more largely as the small and helpless class that must do much of the work and make most of the sacrifices. The state shall pay one fifth of the money required; that is, we as taxpayers shall pay our part of that fifth. The employer shall pay two fifths; that is, we, as purchasers, shall pay our share of that two fifths in increased prices. The workman shall pay two fifths, and again we shall pay our part of it; for the workman will get his share back in increased wages, and the employer will recoup himself in the greater price of his product. Every penny that will be spent on health insurance will come out of your pockets and mine, and out of the pockets of the community at large. It is calculated that about 50 per cent. of the population of this state will fall under the provisions of the compulsory health insurance law. This 50 per cent. does not include the really poor, for even the workman, when he ceases to work, is shortly no longer insured. Hence the 50 per cent. that is left includes the 10 per cent. or more who are really poor, and we shall have to continue to care for them in the future as we have done in the past. Now 50 per cent. of the employed population means much even to those of us who practice among the well to do; it means everything to most of us, whose patients are those in moderate circumstances. Computations prove that somewhere around $2,000 a year will be paid for work which will take all the practitioner's strength and most of his time; for most of us will be salaried employees of the carriers, and our experience with boards of health and other employers of medical labor prove the essential correctness of the figure. If there are panel physicians employed at all, which I doubt, they will work in competition with the salaried men; for the carrier can choose between the paid employee and the panel. Do you doubt for a moment which he will select? A simple calculation will show that if the panel physician gets 25 cents a visit for his work, he will be getting large pay. Furthermore, surgical operations, specialist consultations and attendance, with many other things, are to be provided for by the carrier, as he likes. If you have any doubt as to what fees for such services will be, let the experience of Germany and England, and above all, let the discredited workmen's compensation fee bill of last year be your answer. When the state once officially fixes the value of medical and surgical services for 50 per cent. of our population, it will inevitably affect private fees; it has done so elsewhere. These services have an officially stamped and "market value," of which any one can take advantage. If the value of an insured foreman is $3, will his employer pay you $25 for the same services? The proponents of the bill say that there is a committee to which all contracts must be submitted. There is, indeed, and of the many useless provisions which the bill contains, this strikes me as the worst. The two parties to the contract, the carrier and the physician, are satisfied. Is there any court in the country that would interfere on the part of a third party whose interests are secondary and subsidiary? The proviso is not a safeguard, it is a delusion and a snare.

DR. WALTER LESTER CARR: When the committee appointed by your predecessor met to take up this subject, we felt that it would be advisable to state its endorsement of health insurance, not implying by such endorsement a recommedation of any bill or particular plan. We then studied the bill. We felt that a subject so largely connected with the health of thousands of people of the state should be, in a great degree, controlled by men educated in medicine and qualified to determine the needs of those who are to be benefited by legislation. In conference with the American Association for Labor Legislation, the committee expressed the opinion that, if health insurance is to be enforced by legislation, the medical profession of the state of New York should expect representation on the commission and on the various boards controlling the administration of the law. It also, both formally

and informally, put itself on record as demanding such recognition for the medical profession as is essential to public policy and in justice to the physicians of the state. In presenting the resolutions to this society, the committee held to these basic recommendations, as it believed the details should be settled in the state medical society. Your committee has kept to the purpose for which it was formed, namely, representation for the medical profession and a fair remuneration for all services rendered, and in this it believes it has been successful. At the present time we are placed in the position where, in urging recognition for the medical profession, we are expected to advance a bill which, as drawn, is not satisfactory in many of its paragraphs. I believe that while a free exchange of views should be allowed on the subject of compulsory health insurance, final decision should be delayed until further information is furnished.

Dr. Lewis I. Harris: I do not believe Dr. Gottheil's presentation does justice to him or to certain fundamental demands of society as a whole. I wish to defend in this discussion the principles of compulsory health insurance, and at the same time I wish to express myself as opposed to the Mills bill as it now stands. We hear it said that compulsory health insurance is inevitable. We know it is inevitable just as we know that the struggle for liberal government was inevitable. The achievements in the direction of social justice, such as the protection of child laborers, the protection of women in industry, compensation to laborers, and laws for shorter hours of labor, cannot be confined. It has been stated that the demand for compulsory health insurance has been artificially created. It is necessary in all progressive movements that we should have leadership. The argument that health insurance is an invasion of personal liberty has been made against every proposition to extend liberty, justice and opportunity. It has been argued that compulsory health insurance is class discrimination. This stale argument has been applied to all institutions created for the common weal. The greatest good to the greatest number is properly the ruling principle of democracy. It is claimed that by compulsory health insurance workers will be pauperized and pampered. It is now the fashion for employers to pauperize labor by the so-called "welfare activities," "bonuses," "company stores," etc. The employer now gives the laborer placebos and panaceas to keep him from realizing the need for real welfare work. The working man needs health insurance, and this need will be appreciated if his lot is viewed against the background of low wages and economic pressure, as can be seen from Sydenstricker's and Warren's reports. We are told that the constitution would be violated. We forget that there have been other amendments to the constitution, the fifteenth, for instance. We should halt and pause until physicians have had information from all sources and can express their wishes and desires in the matter.

Dr. I. M. Rubinow: I shall confine my discussion to the problems directly concerning the economic interests of the medical profession. I have heard the opinion expressed that with the broad problem of the necessity of health insurance the medical profession has nothing to do. I thoroughly disagree with this point of view. I shall devote my remarks to the general problem, since Dr. Lambert both here and elsewhere has explained and defended the medical provisions of the Mills bill. I do not discuss this problem in an official capacity. The American Medical Association, as of course you know, has no official opinion on the subject beyond the recognition that the movement is important and requires careful study. Don't you know that the entire opposition of private insurance companies is explained by one fact, namely, that under the bills advanced, insurance companies operating for a profit are excluded from participation? If there is no wage poverty, why is it that 40 per cent. of wage earners when sick go without medical aid? Over a million of the population of this city alone apply for free charitable medical aid. It may be in accord with American traditions for the medical profession to grant all that tremendous amount of medical aid free; but it is required also by American traditions that hundreds of thousands of honest workers are forced to beg for something they ought to be willing to pay for. Perhaps the most serious argument presented is that insurance only indemnifies but does not prevent, or reduce losses. Of course, this is simply not true. The preventive effects of social insurance are too well recognized throughout Europe to need a long argument. If by removing need when a man is sick we cannot improve his chances of recovery, what justification is there for the practice of medicine at all? The medical profession of this or any other state is fully within its legitimate rights when it subjects the provisions concerning medical aid to the closest scrutiny in the interests of both patient and physician; but I would consider it no less than a calamity for the profession, and a reflection on its intelligence, if it would be lured into opposing the principle of this important social reform by clever misrepresentations emanating from private insurance interests.

Dr. Henry W. Berg: Now every physician who has a license to practice medicine is free to bestow his philanthropy where he wishes, and to charge those who are able to pay what he feels is reasonable. Under compulsory health insurance he will have no chance to say what he ought to receive, or he will work under a salary, and he must be prepared to sell his services at a "market value." If he makes a blunder he is now responsible to God, to his own conscience and to the government. Under compulsory health insurance he is responsible to a number of officers and committes from which political and other outside influences cannot be debarred. It is no disgrace for us to look at this subject from the standpoint of our right, as honest and decent men, to earn a living in the community. Compulsory health insurance claims to be altruistic, but is it? When a working man does not pay his premiums for a certain period his insurance ceases. It may fail him when he is most in need of it. I want to ask you how a doctor can do efficient medical work when he is making twenty-four visits a day and receiving only from $1,500 to $2,000 a year.

Dr. Eden V. Delphey: The professional philanthropists are all working for compulsory health insurance; they are trying to put something over on us to our detriment. One may act from altruistic motives and yet be supplying no social need. I should have nothing to gain by the enactment of compulsory insurance. I am fighting because I practice mostly among people who would come under this act. At the same time I am altruistic because I am fighting for the professional life of my brother practitioners. Under the proposed measure a union bricklayer or a housesmith would be aristocrats in comparison with the physician.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Physiology, Baltimore

February, XLII, No. 3

1 *Exchange of Energy in Live Animal Tissues. Study on Liver. A. O. de Almeida, Rio de Janeiro.—p. 359.
2 *Catalase in Muscles of Large and of Small Animals. W. E. Burge and A. J. Neill, Urbana, Ill.—p. 373.
3 *Significance of Prothrombin and of Free and Combined Thrombin in Blood Serum. H. S. Gasser, Baltimore.—p. 378.
4 Postural Activity of Abdominal Muscles of Cat. F. H. Pike and H. C. Coombs, New York.—p. 395.
5 *Physiology of Stomach. Ammonia of Gastric Juice. H. L. Huber, Chicago.—p. 404.
6 Differences in Latent Period and Form of Contraction Curve in Muscle Strips from Different Parts of Frog's Stomach. W. C. Alvarez, San Francisco.—p. 422.
7 Differences in Latent Period and Form of Contraction Curve in Muscle Strips from Different Parts of Mammalian Stomach. W. C. Alvarez, San Francisco.—p. 435.
8 Reflex Respiratory Changes and Concomitant Threshold Stimulus. C. M. Gruber, Albany, N. Y.—p. 450.
9 Experimental Glycosuria. Lactic Acid Production in Blood Following Injection of Alkaline Solutions. J. J. R. Macleod and D. H. Hoover, Cleveland.—p. 460.
10 Nerve Conduction in Cassiopea. A. G. Mayer, Washington, D. C. —p. 469.

11 Nature and Time Relations of Fundamental Heart Sounds. C. J. Wiggers and A. L. Dean, Jr., New York.—p. 476.
12 Depressor Function of Thoracic Sympathetic Nerve and Its Connections. R. Burton-Opitz, New York.—p. 498.

1. **Energy Exchange in Liver.**—De Almeida describes a new technic for the rigid measurement of respiratory exchanges of tissues suspended in defibrinated blood, which procedure is also applicable to the more simple process of determining the amount of gases in the blood.

2. **Catalase in Muscle of Large and Small Animals.**—Evidence is presented by Burge and Neill to show that the content of heart muscle in catalase, per unit of weight, bears an inverse relationship to the size of the animal, or a direct relationship to the intensity of the oxidation processes.

3. **Prothrombin and Thrombin in Blood Serum.**—There is only one kind of thrombin in serum says Gasser. This may be formed from prothrombin by the action of thromboplastic substance and calcium or may be liberated from a combination with antithrombin by alkali activation according to the method of Schmidt. The inactive stage from which thrombin is liberated by alkali activation is believed to be a thrombin-antithrombin combination. Thrombin is not liberated from combination with antithrombin by the action of thromboplastic substance. The amount of prothrombin in serum varies inversely as the amount of tissue extract present at time of clotting. The amount of thrombin formed in the presence of a given amount of thromboplastic substance is, apparently, definite in amount; it forms rapidly and is combined rapidly, the system then returning to equilibrium. This rapid inactivation is a potent factor in the maintenance of the normal fluidity of the blood. Plasma is very intolerant of free thrombin.

5. **Ammonia of Gastric Juice.**—Ammonia is normally found in small amounts in the gastric juice of man and dog. The amount is increased by high protein diet, and by the addition of ammonium salts to the food. The fundic mucosa contains the most ammonia, the pyloric mucosa is next in order, while mucosa of the cardiac end of the stomach contains the least ammonia. The duodenal mucosa contains less ammonia than the fundic mucosa. In certain pathologic conditions (especially gastric ulcer and cancer) the amount of ammonia in the gastric juice is definitely increased, but this increase may not be greater than found persistently in certain normal individuals. The origin of the gastric juice ammonia is a complex one. Some of the ammonia is evidently excreted from the blood, and this factor depends on the concentration of the ammonia in the blood. Part of the ammonia represents deaminization processes in the gastric mucosa, and these in turn depend on the quantity of protein in the food. The possible rôle of the gastric flora has not been eliminated.

American Journal of Public Health, Boston

February, VII, No. 2

13 Laboratory Diagnosis of Poliomyelitis. J. B. Neal, New York.—p. 144.
14 Birth Control in Its Medical, Social, Economic and Moral Aspects. S. A. Knopf, New York.—p. 152.
15 Year's Work in Hay Fever Prevention in United States. W. Scheppegrell, New Orleans.—p. 173.
16 Preaching Health on Highways. E. G. Williams, Richmond, Va.—p. 179.
17 Michigan's Part in War on Tuberculosis. A. Mulder, Holland, Mich.—p. 182.
18 Educational Work of Brooklyn Antituberculosis Committee. H. D. Jenkins, New York.—p. 187.
19 Designs for Privies. R. Messer, Richmond, Va.—p. 190.

Archives of Internal Medicine, Chicago

February, XIX, No. 2

20 Osteogenesis Imperfecta; Report of Cases. J. H. Hess, Chicago.—p. 163.
21 *Hereditary Hemorrhagic Telangiectasia; Report of Cases; Review of Literature. W. R. Steiner, Hartford, Conn.—p. 194.
22 *Clinical Study of Secretions on Proximal and Distal Sides of Pylorus. A. S. Robinson, Cleveland.—p. 220.
23 *Relation of Hypertrophic Osteo-Arthropathy to Pulmonary Tuberculosis. L. Kessel, New York.—p. 239.
24 *Typhoidin Quotients; Analysis of Factors of Uncertainty in Cutaneous Typhoidin Test. E. S. Kilgore, San Francisco.—p. 263.
25 *Comparison of Two Methods of Vaccinating Against Typhoid. E. S. Kilgore, San Francisco.—p. 276.
26 Agglutinins and Complement Fixing Antibodies in Serum of Persons Vaccinated Against Typhoid. K. F. Meyer and E. S. Kilgore, San Francisco.—p. 293.
27 d-Glucose Tolerance in Health and Disease. R. M. Wilder and W. D. Sansum, Chicago.—p. 311.

21. **Hereditary Hemorrhagic Telangiectasia.**—From a consideration of the histories of three families affected with hemorrhagic telangiectasis and those previously recorded Steiner concludes that heredity is the only important etiologic factor as yet discovered, and that both sexes are equally affected and equally capable of transmitting the disease. Microscopically, a developmental defect has been found in the dilated capillaries—the elastic and muscle fibers appear to be wanting. The capillaries, consequently, are very liable to produce hemorrhages by their rupture, which is induced either spontaneously or by traumatism. The hemorrhages from the nose are generally seen early in life, while the telangiectases are a later development. The cautery in most instances offers the best results in the treatment of the bleeding telangiectases.

22. **Secretions at Pylorus.**—The secretions on the proximal and distal sides of the pylorus have been studied by Robinson in 125 patients complaining of various gastro-intestinal disturbances. In 40 per cent. of these nothing pathologic could be found in the gastric secretions to account for the distress, except an increase in acidity above that considered as the average. These cases were diagnosed "gastric neurosis," most commonly secondary to an infection, as tuberculosis, syphilis, influenza, chronic constipation and mental or physical strain. In achlorhydria, simple and malignant (gastric cancer, 12 cases), and in pernicious anemia the acidity curve has a tendency to descend, in other conditions to ascend. The highest ascent was in duodenal ulcer. The duodenal secretions found in four patients having more or less typical symptoms of gallstones contained a heavy sediment, which was different from that seen in other cases. It was heavier and of an orange yellow color. Three of these patients were operated on and the gallbladder was found to contain numerous small stones. No abnormal findings were present in the duodenal secretions in cases of cholelithiasis in which only one stone was present. An alkaline doudenal secretion that is cloudy is said to be suggestive of an inflammatory condition in the duodenum or biliary tract. The cloud is due to the presence of bacteria and pus. It does not clear on the addition of sodium hydroxid. Considering the theory that pernicious anemia is caused by a hemolytic agent and that this agent is dependent on a disturbance of the gastro-intestinal tract, Robinson attempted to find out if there were present in the gastric and duodenal secretions any substances which had a greater hemolytic action than in normal secretions. The result was negative. Without a single exception the gastric and duodenal secretions from cases of pernicious anemia caused no more hemolysis than do normal secretions.

23. **Hypertrophic Pulmonary Osteo-Arthropathy.**—The thirty-two patients reported on by Kessel were suffering from pulmonary tuberculosis. They were all in the second or third stage of the disease. Kessel sought to establish some relation between the clinical manifestations of the pulmonary disease and the type of osteo-arthropathy present, but was unable to demonstrate a connection between the two. Pronounced evidence of pulmonary tuberculosis may be associated, on the one hand, with simple clubbing of the fingers, while, on the other hand, less marked manifestations of the pulmonary disease may be accompanied by distinct changes in the long bones. The bone changes, moreover, are not definitely associated with the type of degree of the clinical expression of the pulmonary disease. The author emphasizes, however, that hypertrophic osteo-arthropathy is present more frequently in pulmonary tuberculosis than the usual clinical examination would permit the author to believe.

24. **Typhoidin Quotients.**—The facts brought out by Kilgore in this study indicate even more strongly than those formerly reported that the cutaneous typhoidin test should not be relied on as an index of immunity in individual cases, and that even in a study of groups of cases its results need to be considered with much conservatism.

25. **Comparison of Two Methods of Vaccinating against Typhoid.**—The two methods reported on by Kilgore are the U. S. Army method and the Gay-Claypole method. He reports the following findings, with the understanding that they are to be given weight only in accordance with the number of observations on which they are based: 1. The higher the typhoidin quotient in a given person, the greater the chances of a severe reaction to antityphoid inoculation. 2. The severer local reactions to vaccine tend to occur in those subjects with the higher temperature reactions. 3. The supposedly more severe average reaction to antityphoid inoculation of subjects who have previously had the treatment is probably overrated. 4. The use of army vaccine, or sensitized vaccine sediment if the preparations are fresh, makes little if any difference in the average local and temperature reactions. 5. When either type of vaccine is administered every other day the temperature reactions following the second and third doses are likely to be more severe than when the injections are ten days apart. A difference in the local reactions is not so clear cut. The average impression of the subjects vaccinated every other day is that the second injection gave the greatest local and general discomfort and the third least. The average member of the ten-day group feels that both general and local reactions were less with each succeeding dose. 6. The typhoidin test failed to show any noteworthy differences in effectiveness between the two-day or ten-day schedules, and, in the first few weeks, between the two vaccines used. Later the typhoidin quotients were higher in those who had received sensitized vaccine, but the differences are not decided enough to support definite conclusions that this is the rule. 7. According to the typhoidin test it is suggested that the ones who react least to vaccination tend to profit most by its administration.

Canadian Medical Association Journal, Toronto

February, VII, No. 2

28 Paratyphoid in Army at Dardanelles. E. N. Coutts.—p. 97.
29 Some Clinical Aspects of Acute Anterior Poliomyelitis. C. F. Martin, Montreal.—p. 113.
30 Poliomyelitis as Seen by Surgeon. A. M. Forbes, Montreal.—p. 119.
31 Advantages of Early Sanatorium Treatment. D. Townsend, River Glade, New Brunswick.—p. 125.
32 Dislocations of Spine. C. E. Smyth, Medicine Hat, Alberta.—p. 129.
33 Hay Fever. F. W. Gershaw, Medicine Hat, Alberta.—p. 131.
34 Diabetes Mellitus in Child of Three. L. M. Lindsay, Montreal.—p. 133.
35 Infantile Eczema and Status Lymphaticus. L. M. Lindsay, Montreal.—p. 135.

Colorado Medicine, Denver

February, XIV, No. 2

36 Botulism. G. H. Curfman, Salida.—p. 35.
37 Care of Mentally Disordered in Colorado. S. W. Hamilton, Utica, N. Y.—p. 42.
38 New Growths and Infections Associated with and Following Chronic Suppurative Appendicitis; Report of Three Cases. C. E. Tennant, Denver.—p. 45.
39 Study of Diseases of Chest. J. J. Waring, Denver.—p. 52.

Indiana State Medical Association Journal, Fort Wayne

February, X, No. 2

40 Certain Phases of Disease of Lacrimal Apparatus. W. C. Posey, Philadelphia.—p. 43.
41 *Incidence, Diagnosis and Treatment of Visceral Syphilis. G. W. McCaskey, Fort Wayne.—p. 51.
42 Tuberculosis Plus. A. Henry, Indianapolis.—p. 59.

41. Abstracted in THE JOURNAL, Oct. 28, 1916, p. 1326.

Journal-Lancet, Minneapolis

February 15, XXXVII, No. 4

43 Cysts of Larynx; Report of Cases. G. B. New, Rochester.—p. 99.
44 Surgical Limitations of General Practitioner. J. H. Adair, Owatonna.—p. 102.
45 *Hematopoietic-Hemolytic Index; Differential Diagnosis of Pernicious Anemia Amenable to Cure by Splenectomy. J. P. Schneider, Minneapolis.—p. 105.
46 Acute Dilatation of Stomach in Pneumonia; Report of Cases. A. F. Bratrud, Grand Forks, N. D.—p. 108.
47 Sixty-Five Consecutive Cases of Grave Appendicitis without Death or Impairment. D. V. Moore, Yankton, S. D.—p. 111.
48 Infantile Pyloric Stenosis Necessitatis. J. T. Leland, Herman.—p. 115.
49 Opportunities for Special Work in Obstetrics in New York. A. C. Tanner, St. Louis Park.—p. 117.

45. **Hematopoietic-Hemolytic Index in Differential Diagnosis.**—A total of eighty-eight studies in fifty-nine cases have been made by Schneider. Of these, twenty are patients with pernicious anemia, one with hemolytic icterus, eleven with severe anemias other than splenic, and the remainder with miscellaneous conditions, nonhemolytic in character. Of the patients with pernicious anemia, seven have been splenectomized. That the blood picture and the clinical picture of chronic enteric bleeding anemia may be mistaken for parenteral anemia, was illustrated by the findings in four cases, all of these proving at operation or necropsy to be carcinoma of the stomach. The duodenal pigments presented an oligochemia in degree parallel with the severity of the anemia. Hence, while the blood findings become more and more difficult of interpretation, the severer the bleeding anemia, the more strikingly the duodenal pigment values stand at opposite poles. It is, therefore, of prime importance in a given case to confirm by a quantitative estimation of the duodenal pigments the splenic origin of an otherwise classical pernicious anemia, particularly when splenectomy is contemplated.

The hematopoietic-hemolytic index should be ascertained. Briefly, the H — H index $= \frac{Z + Y}{X}$ in which Z represents the thousands, including the first decimal of the total pigment value as determined quantitatively by the spectroscopic method Y, the same of the blood count in round numbers, and the value of X, 6. To illustrate: in a given case, with the total pigment values around 5,400, the blood count 1,500,000, the H — H index is $\frac{5.4 + 1.5}{6} = \frac{6.9}{6} = 1.1$, which is a plus index. In another case the total pigments are 2,200, the blood count is 1,500,000, the index $\frac{2.2 + 1.5}{6} = \frac{3.7}{6}$, or 0.6—, which is a severely minus index. In the former case so much pigment could not be obtained unless the marrow still supplied the raw material in great abundance. In the author's series of twenty cases, seven only yielded a plus H—H index, while two approached an index of one. Of these seven, three have been splenectomized with apparently more than the rather usual temporary improvement. However, since less than one year has elapsed since splenectomy, Schneider withholds judgment.

Journal of Biological Chemistry, Baltimore

February, XXIX, No. 1

50 *Excretion of Creatin and Creatinin Parenterally Introduced. J. F. Lyman and J. C. Trimby, Columbus.—p. 1.
51 *Cholesterol and Cholesterol Esters in Human Blood. W. R. Bloor and A. Knudson, Boston.—p. 7.
52 Benedict's Method for Estimation of Total Sulphur in Urine. M. H. Givens, New Haven, Conn.—p. 15.
53 Chemical Composition of Placenta (Bovine). F. Fenger, Chicago.—p. 19.
54 Estimation of Hydrocyanic Acid and Probable Form in which it Occurs in Sorghum Vulgare. J. J. Willaman, St. Paul, Minn.—p. 25.
55 Effect of Anesthetics and of Frosting on Cyanogenetic Compounds of Sorghum Vulgare. J. J. Willaman, St. Paul, Minn.—p. 37.
56 *Factors Involving Accuracy of Creatinin Determinations in Human Blood. A. O. Gettler, New York.—p. 47.
57 Behavior of Chickens Fed Rations Restricted to Cereal Grains. E. B. Hart, J. G. Halpin and E. V. McCollum, Madison, Wis.—p. 57.
58 *Relative Value of Certain Proteins and Protein Concentrates as Supplements to Corn Gluten. T. B. Osborne and L. B. Mendel, New Haven, Conn.—p. 69.
59 *Cholesterol in Human Blood Under Pathologic Conditions. W. Denis, Boston.—p. 93.
60 Epinephrin Uracil Dinucleotide and Structure of Yeast Nucleic Acid. W. Jones and B. E. Read, Baltimore.—p. 111.
61 Mode of Nucleotide Linkage in Yeast Nucleic Acid. W. Jones and B. E. Read, Baltimore.—p. 123.
62 Influence of Intravenous Injection of Witte's Peptone on Sugar Content of Blood and Epinephrin Hyperglycemia and Glycosuria. S. Kuriyama, New Haven, Conn.—p. 127.
63 Variation in Amount of Phosphatides in Corpus Luteum of Sow During Pregnancy. G. W. Corner, Berkeley, Calif.—p. 141.

50. **Excretion of Creatin and Creatinin Parenterally Introduced.**—Subcutaneous injections of creatin into rabbits and man were followed by increased urinary creatinin excretion

which Lyman and Trimby regard as further evidence of an intravital transformation of creatin to creatinin. In man the larger part (76 to 77 per cent.) of the creatin injected was destroyed or stored in the body. The injection of creatinin was not followed by the excretion of creatin in the urine.

51. **Cholesterol and Its Esters in Human Blood.**—In normal human blood Bloor and Knudson found a constant relation between free cholesterol and cholesterol esters. In whole blood the average percentage of cholesterol in combination as esters was found to be 33.5 per cent., in plasma 58 per cent. of the total cholesterol. The variation from the average in individuals was about 15 per cent. of the average. There was no notable difference in these values between men and women. In pathologic conditions the relation between free and bound cholesterol was found normal in all cases except carcinoma and most cases of nephritis, in both of which the percentage combined as ester was low. In pregnancy the values for cholesterol esters were high. The constant relation between free and bound cholesterol, the authors claim, gives further support to the assumption that cholesterol takes an active part in fat metabolism.

56. **Accuracy of Creatinin Determinations in Human Blood.**—In the light of the experimental evidence presented, Gettler does not subscribe to McCrudden and Sargent's view, that all creatinin blood values heretofore reported are useless, because of error in method. The values, in normal blood, of Gettler and Baker are correct and are here again confirmed. Furthermore, in all other reported values, which lie at 2 mg. in 100 c.c. and above, the error is not enough to warrant rejection. A table is given for reading milligrams of creatinin in 100 c.c. of blood directly, in which all the above sources of error have been accounted for. Known solutions of creatinin have been determined with the Folin standard and also with this table, conclusively proving that for values of 0.1 to 0.5 mg. of creatinin the Folin standard gives values much too high. Eleven additional normals have been determined for their creatinin value. These range between 0.1 and 0.4 mg. in 100 c.c., confirming Gettler and Baker's previous report. The values of 1.0 to 2.0 mg. in 100 c.c. as reported by Folin and Denis, and by Myers and Fine, Gettler says, are much too high.

58. **Protein Supplements to Corn Gluten.**—Data regarding the growth of rats are presented by Osborne and Mendel to show the relative nutritive values of a number of proteins and protein "concentrates" when used to supplement corn gluten in an otherwise adequate ration. The products studied included casein, lactalbumin, edestin, cottonseed protein, cottonseed flour, soy bean flour, "milkalbumin," beef tissue, fish meat meal, corn oil cake, "vegetable albumin flour," brewers' grains, distillers' grains, pea meal and peanut meal. The efficiency of these supplements presumably depends essentially on their relative content of lysin and tryptophan; for the addition of these amino-acids, either as such, or in the form of proteins yielding them, renders corn gluten suitable for growth. Of the various proteins employed to supplement the inefficient corn gluten, lactalbumin is by far the most effective. Satisfactory growth is produced with smaller quantities of this protein than of any of the others recorded. The samples of brewers' grains, distillers' grains, and "vegetable albumin flour" used were the least efficient supplements tested, presumably because of their low content of lysin. It is evident that the small additions of the more efficient proteins actually supplement the corn gluten instead of themselves furnishing all of the protein used for growth, because equivalent amounts of these proteins alone in a similar ration are incapable of inducing a comparable degree of growth.

59. **Cholesterol in Human Blood.**—Among the pathologic conditions examined by Denis, hypercholesterolemia was found to exist only in diabetes and only in a relatively small number of cases of this disease. Low cholesterol values are not characteristic of any special pathologic condition but are invariably found in conditions in which marked prostration or cachexia exist. Cholesterol determinations in the blood are therefore at present of no value in the clinical diagnosis or prognosis of disease.

Journal of Laboratory and Clinical Medicine, St. Louis

February, II, No. 5

64 *Histopathology of Autonomic Nervous System in Goiter. L. B. Wilson, Rochester, and T. O. Young, Minneapolis.—p. 295.
65 *Piperazin and Other Organic Urate Solvents. P. J. Hanzlik, Cleveland.—p. 308.
66 *Chronic Colitis and Its Roentgenologic Findings. F. B. McMahon and R. D. Carman, Rochester, Minn.—p. 328.
67 Certain Aspects of Purulent Meningitis. C. E. Kiely, Cincinnati.—p. 341.
68 Apparatus for Use in Examining Feces for Evidences of Parasitism. M. C. Hall, Detroit.—p. 347.

64. Abstracted in THE JOURNAL, Nov. 25, 1916, p. 1625.

65. **Piperazin and Other Organic Urate Solvents.**—Hanzlik failed to find any reliable evidence to show that piperazin, in small or therapeutic doses, imparts to urine urate solvent qualities, either by direct addition or after excretion. Excessive doses of the drug produce a slight but practically negligible increase in uric acid excretion, the same being effectively secured by the use of such well known alkalies as bicarbonate and citrate. The solvent action of low concentrations of piperazin on calculi is practically negligible. In very high concentrations a solvent power, though limited and doubtful, seems to exist. There is no reliable evidence to indicate that piperazin can prevent or remove urate deposits. Diuresis is uninfluenced by the administration of even large doses of piperazin. The direct addition of piperazin to urine renders it alkaline. However, after administration the reaction remains unchanged because in its passage though the body enough piperazin is destroyed to markedly reduce its concentration in the urine. Scientific evidence, though limited, and clinical opinion, indicate that piperazin is valueless in gout. The administration of piperazin may be attended with serious side actions. There is sufficient scientific evidence to indicate the worthlessness of the following as urate solvents; urosin, lycetol, sidonal, quinic acid, lysidin, urol, quinolin, colchicum and piperidin.

66. **Chronic Colitis and Roentgenologic Findings.**—The authors' experience suggests that the Roentgen findings when carefully correlated with the clinical history can be made of much use in the diagnosis of chronic colitis. The roentgenogram also enables a more accurate estimate of the extent of involvement and thus may serve as a guide in determining whether the treatment shall be medical or surgical. There are definite organic changes in all the coats of the colon wall in chronic colitis, resulting from chronic inflammatory reaction with edema, lymphocytic infiltration, thickening, scar tissue formation and contraction. The Roentgen examination in these cases shows the colon to be small, smooth and without haustration in the part or parts affected.

Journal of Nervous and Mental Disease, Lancaster, Pa.

February, XLV, No. 2

69 *Stratigraphic Analysis of Finer Cortex Changes in Certain Normal Looking Brains in Dementia Praecox. E. E. Southard and M. M. Canavan, Boston.—p. 97.
70 *Tumors of Thymus in Myasthenia Gravis. E. T. Bell, Minneapolis. —p. 130.
71 *Abderhalden Reaction in Mental Diseases. H. A. Cotton, E. P. C. White and W. W. Stevenson, Trenton, N. J.—p. 144.

69. **Cortex Changes in Dementia Praecox.**—Southard and Canavan present an analysis, chiefly stratigraphic, of certain lesions, notably nerve cell loss and gliosis (including satellitosis) in four cases of dementia praecox. These cases were cases which showed no gross aplasia, sclerosis or atrophy in the gross brain, and yet exhibited symptoms of two years' or greater duration, entitling them to be considered in the dementia praecox group. In connection with this work, a review of Kraepelin's estimate of structural work in dementia praecox brains is offered, and the stratigraphic data are presented in relation to Kraepelin's views as to the functions of suprastellate and infrastellate layers. Absence of suprastellate lesions in a case of the paranoic or paraphrenic group was noted, but there was no special evidence of schizophrenia in this case as clinically viewed; the case did show infrastellate lesions in areas contiguous with one another in the two flanks of the brain. It might be possible to correlate the late catatonia and late hallucinosis in the case with these infrastellate lesions. Other cases possibly more typical

of dementia praecox exhibited lesions both in the suprastellate and infrastellate regions, sometimes numerous, sometimes isolated and apparently capricious in distribution. No good example of lesions chiefly limited to the suprastellate layers has been found. Gliosis and satellitosis do not follow the nerve cell losses. The same holds true of shrinkage changes and axonal reactions. Nor is satellitosis closely associated either with shrinkage changes (which are not numerous in this series) or with axonal reactions. The dissociation of parenchymatous (neuronic) and interstitial (neuroglia) changes previously reported is further emphasized.

70. **Tumors of Thymus in Myasthenia Gravis.**—A benign thymic tumor from a typical case of myasthenia gravis is described by Bell. The tumor is composed of thymic tissue of a fetal type, namely, a dense epithelial reticulum with lymphocytes. The usual thymic rests were found in the adipose tissue around the growth. The thymic tumors occurring in myasthenia gravis seem to form a distinct group unlike any other thymic tumors. Bell says they may be classified as benign thymoma. Some abnormality of the thymus is found in nearly half the cases of myasthenia gravis.

71. **Abderhalden Reaction in Mental Diseases.**—The results of the Abderhalden tests in 289 cases, including the various psychoses and some normal individuals, are reported by the authors. The most important findings from this investigation are in the groups of dementia praecox and epilepsy. In dementia praecox the number of positive cases to sex gland was forty-six out of fifty-eight tested, or 81 per cent., and in nine cases the reaction was negative. Blood counts were made in all cases, but in dementia praecox wide deviations from the normal were noticed. Thus the lymphocytes were present usually in a larger percentage than the polymorphonuclear leukocytes; in smears, lymphocytes were 56 per cent. and polymorphonuclears 38 per cent. There was also a marked increase in the eosinophils, in some cases reaching as high as 6 per cent. The total leukocytes was also low, in one case 2,100 per c.c., and averaging about 6,500. In the other psychoses the blood count was approximately normal. Coupled with this is usually a slightly increased pulse rate with low blood pressure and subnormal temperature.

Reference is made to the fact that 75 per cent. of the cases of dementia praecox die of tuberculosis and that this is more than a coincidence, especially as the group with the next highest proportion of tuberculosis is general paralysis, in which 16 per cent. die of tuberculosis. The acute cases of dementia praecox, the type in which death occurs in from three to five years, practically all die of tuberculosis. The question of the relation of tuberculosis to dementia praecox demands further investigation, but enough data are at hand to formulate the hypothesis that the occurrence of tuberculosis in such a large percentage of dementia praecox is of some etiologic significance. The pathologic changes in dementia praecox also indicate a possible toxic condition due to biochemical changes, probably from a disturbance of the glands of internal secretion. Sixty-nine cases of epilepsy examined were all positive to the suprarenal gland.

Medical Record, New York

February 17, XCI, No. 7

72 Psychiatry and Psychology. C. L. Dana, New York.—p. 265.
73 Birth Control. G. W. Kosmak, New York.—p. 268.
74 Tests for Renal Function in Nephritis. H. M. Moses, Brooklyn. —p. 273.
75 Hippocrates Redivivus. W. B. Konkle, Montoursville, Pa.—p. 278.
76 Fracture of Eleventh Rib by Muscular Action; Résumé of Reported Cases. J. Seilin, New Windsor, Ill.—p. 281.
77 Face and Its Expression in Diagnosis. J. L. Tracy, Toledo.—p. 283.

Michigan State Medical Society Journal, Grand Rapids

February, XVI, No. 2

78 *Insanity and Pelvic Diseases in Women. W. P. Manton, Detroit. —p. 49.
79 *Relationship Between Gynecologic and Neurologic Conditions. R. Peterson, Ann Arbor.—p. 51.
80 Nervous Symptoms Arising in Female Pelvic Organs. R. R. Smith, Grand Rapids.—p. 54.
81 Surgical Prognosis. F. B. Walker, Detroit.—p. 57.
82 How Modern Surgery Began. O. H. Cox, Sault Ste. Marie. —p. 59.
83 Case of Diabetes with Umbilical Hernia. Complete Laceration of Perineum, and Fistulous Openings in Region of Right Labium. Case of Removal of Ovarian Cystic Growths without Aspiration. R. Peterson, Ann Arbor.—p. 64.
84 Case of Transverse Myelitis of Cervical Region of Cord. A. M. Barrett, Ann Arbor.—p. 68.
85 Case of Multiple Sclerosis Developing During Acute Pulmonary Tuberculosis. T. Klingmann, Ann Arbor.—p. 71.
86 Treatment of Diphtheria Carriers; Report of One Hundred and Twenty-Five Cases. D. M. Cowie, Ann Arbor.—p. 72.

78 and 79. Abstracted in THE JOURNAL, Sept. 2, 1916, p. 767.

New York Medical Journal

February 17, CV, No. 7

87 Action of Pituitary Extract on Gastro-Intestinal Tract of Man. H. K. Pancoast and A. H. Hopkins, Philadelphia.—p. 289.
88 Clinical Observations on So-Called Grippe. B. M. Randolph, Washington, D. C.—p. 292.
89 Male Impotence and Sterility in Marriage. B. S. Talmey, New York.—p. 296.
90 Benzol in Treatment of Leukemia; Report of Case. H. Weinstein, New York.—p. 299.
91 Enforced Rest. S. Block, New York.—p. 300.
92 Sprayer for Paraffin Treatment of Burns. W. G. Hudson, Wilmington, Del.—p. 301.
93 Stricture of Urethra. M. Stern, New York.—p. 302.
94 Don'ts in After-Care and Treatment of Infantile Paralysis. C. Ogilvy, New York.—p. 305.
95 Research in Epilepsy; Report of Twenty-Five Cases. H. A. Knox, Bayonne, N. J.—p. 308. To be continued.

New York State Journal of Medicine

February, XVII, No. 2

96 Early Diagnosis of Potts' Disease. S. L. Taylor and B. C. Darling, New York.—p. 51.
97 *Tobacco Smoking and Blood Pressure. W. G. Thompson and W. H. Sheldon, New York.—p. 55.
98 Decapsulation for Chronic Bright's Disease. S. Lloyd, New York.—p. 58.
99 Treatment of Maxillary Sinus Disease. C. F. Theisen, Albany. —p. 63.
100 Roentgenography of Eye and Orbit. G. S. Dixon, New York. —p. 67.
101 Effect of Malformation and Infection of Oral Cavity of Child on Its Future Health. S. Palmer, Poughkeepsie.—p. 72.
102 Economic Disadvantages of Compulsory Health Insurance. W. G. Curtis.—p. 75.
103 Need for Health Insurance. I. Fisher, New Haven, Conn.—p. 81.
104 Industrial vs. Private Medical Practice. G. L. Howe, Rochester. —p. 84.
105 Gastric and Duodenal Ulcer. G. B. Eusterman, Rochester, Minn. —p. 88.
106 *Torsion of Pedicle of Ovarian Cysts Complicating Acute Appendicitis. R. G. Loop, Elmira.—p. 94.

97. **Tobacco Smoking and Blood Pressure.**—Fifty-eight patients in middle or advanced life with high blood pressure and arteriosclerosis were examined by Thompson and Sheldon. The maximum effect of cigar smoking was included in different cases within the limits of a rise of systolic pressure of 35 mm. and of pulse pressure of 22 mm., on the one hand, and a fall of 30 mm. in systolic pressure and 34 mm. of pulse pressure, on the other, the effects diminishing usually after about an hour. In the fifty-eight patients there was a rise of systolic pressure in 35 per cent. and a fall in 45 per cent., the remaining 20 per cent. being unaffected. The results were not always uniform in the same patient when recorded at long intervals, the same patient sometimes exhibiting a rise and less often a fall in systolic pressure. The results were not uniformly proportional to the degree of initial blood pressure in the individual patient. That is, patients with an initial systolic pressure of 160 to 170 mm. showed as much variation after smoking as those with an initial pressure of 250 mm. or more. In seventeen patients more than one observation was made, with a total of eighty-two experiments, to include the pulse pressure. In these cases the average rise was found to equal the average fall, being 11 mm.

The pulse pressure did not invariably rise with the systolic pressure, but occasionally fell or remained unaltered. The effects of cigaret smoking corresponded in general to those of cigar smoking and were fully as variable. The average increase in pulse rate was thirteen beats per minute. It is stated definitely by the authors that whereas the risk from any elevation in blood pressure increases greatly the higher the initial pressure in the patient, it is undesirable for any one having a constant systolic pressure much above 200 to smoke, and second, smoking is equally undesirable for any one hav-

ing a constant initial pressure above 160 mm. when the use of tobacco is found uniformly to produce a considerable rise in blood pressure.

106. Abstracted in THE JOURNAL, June 17, 1916, p. 2037.

Northwest Medicine, Seattle

February, XVI, No. 2

107 Paralytic Deformities of Feet. C. R. McClure, Portland, Ore. —p. 33.
108 Clinical Application of Newer Methods of Treatment of Diabetes Mellitus. N. W. Jones, Portland, Ore.—p. 38.
109 Inclusion Tumors. J. E. Else, Portland, Ore.—p. 41.
110 Children—Conveniently Overlooked. F. M. Sprague. Pocatello, Ida.—p. 45.
111 Plea for Earlier Recognition of Squint in Children by Family Physician. C. A. Veasey, Spokane.—p. 47.
112 Conservative Treatment of Convergent Strabismus. J. Clothier, Pocatello, Ida.—p. 48.
113 Nitrous Oxid-Oxygen Anesthesia in Major Surgery. A. J. Browning, Portland, Ore.—p. 50.
114 Novocain Local Anesthesia. W. B. Holden, Portland, Ore.—p. 52.

Oklahoma State Medical Association Journal, Muskogee

February, X, No. 2

115 Etiology and Pathology of Keratitis. P. F. Herod, El Reno. —p. 41.
116 Symptoms and Diagnosis of Keratitis. E. S. Ferguson, Oklahoma City.—p. 43.
117 Treatment of Keratitis. D. D. McHenry, Oklahoma City.—p. 46.
118 Acute Pyelitis. W. M. Taylor, Oklahoma City.—p. 52.
119 Colonic Ulceration, Its Operative Treatment. G. A. Wall, Tulsa. —p. 54.
120 Some of Complications and Sequelae of Lobar Pneumonia. T. H. McCarley, McAlester.—p. 56.
121 Tumors of Testicle. D. D. Paulus and W. H. Bailey, Oklahoma City.—p. 58.
122 Large Perforating Ulcer of Anterior Wall of Stomach; Report of Case. W. H. Livermore, Chickasha.—p. 66.

Tennessee State Medical Association Journal, Nashville

February, IX, No. 10

123 Conservation of Ovarian Influence. T. D. McKinney, Nashville. —p. 385.
124 *Plea for Early Recognition and Treatment of Hyperthyroidism. J. A. Crisler and E. J. Johnson, Memphis. —p. 388.
125 *Acute Middle Ear Troubles. W. Dotson, Lebanon.—p. 390.
126 Hemoptysis and Hematemesis in Typhoid; Report of Case. C. E. Brush, Nashville.—p. 397.
127 Bone and Tendon Transference. J. P. Baird, Dyersburg.—p. 400.
128 Urologic Armamentarium; Its Value in Diagnosis and Some of Its Therapeutic Applications. I. Simons, Nashville.—p. 403.
129 Acute Infective Osteomyelitis. E. T. Newell, Chattanooga.— —p. 405.
130 Fat Indigestion in Infancy. J. M. Lee, Nashville.—p. 409.

124 and 125. Abstracted in THE JOURNAL, April 22, 1916, p. 1347.

Wisconsin Medical Journal, Milwaukee

February, XV, No. 9

131 Chronic Appendicitis. F. G. Connell, Oshkosh.—p. 309.
132 Better Service in Diphtheria Diagnosis. L. L. Gilman, Madison. —p. 316.
133 Industrial Welfare Work as Applied to Railroads. C. W. Hopkins, Chicago.—p. 318.
134 Lip Reading for Adult Deaf and Hard-of-Hearing. V. Sinclair, Milwaukee.—p. 323.
135 Fundamental Principles of Protein Poisoning Manifestations. R. C. Brown, Milwaukee.—p. 327.
136 Interpretation of Laboratory Reports on Wassermann Tests. J. J. Seelman, Milwaukee.—p. 328.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

January, XXI, No. 8

1 Case Reports: Air and Fluid in Left Cranium. Charcot's Joint Associated with Myositis Ossificans. S. G. Scott.—p. 237.
2 Power of Electrolysis to Cure Suppuration. C. Russ.—p. 241.
3 Roentgen Ray Spectrum of Tungsten. A. W. Hull.—p. 245.

Indian Medical Gazette, Calcutta

January, LII, No. 1

4 Study of After-Treatment of War Injuries and Disabilities. M. H. Thornely.—p. 1.
5 Surgical Notes at War Hospital. L. P. Stephen.—p. 4.
6 *Chronic Splenomegaly in Lower Bengal with Special Reference to Prevalence and Clinical Differentiation of Kala-Azar. L. Rogers. —p. 7.
7 Case of Fever Resembling Brill's Disease. J. W. D. Megaw. —p. 15.
8 Prevention of Sepsis in Cataract Extraction. H. Herbert. —p. 18. To be continued.

6. **Chronic Splenomegaly in Lower Bengal.**—Spleen punctures in 166 cases of chronic splenomegaly cases in lower Bengal have revealed the parasites of kala-azar in only 40 per cent. Of 114 cases showing fever while in hospital, Leishman-Donovan bodies were found in 57 per cent. The size of the spleen and liver, the degree of anemia, and the seasonal incidence, of the admissions, Rogers says, afford no material help in distinguishing between kala-azar and chronic malaria. Great leukopenia, such as less than 1 white to 1,500 red corpuscles, is greatly in favor of kala-azar, and if the fever has persisted for less than one year, it is practically diagnostic of that disease. Marked loss of weight, especially if it continues under treatment in hospital, is much in favor of kala-azar as against chronic malaria. In cases of splenomegaly, a history of fever on and off for three years or more is almost diagnostic of chronic malaria as against kala-azar. The temperature curve affords the greatest diagnostic aid in chronic splenomegaly in lower Bengal. If fever is absent, or ceases within seven days, with or without quinin, active kala-azar can practically be excluded; while if fever persists beyond a week in spite of 20 to 30 grains of quinin a day, the case is so extremely likely to be kala-azar that the patient should be treated as such by tartar emetic intravenously, which is a specific remedy for the disease.

Lancet, London

February 3, I, No. 4875

9 *Bladder in Gunshot and Other Injuries of Spinal Cord. J. W. T. Walker.—p. 173.
10 Method of Concentrating Entameba Cysts in Stools. J. W. Cropper and R. W. H. Row.—p. 179.
11 Case of Suppurative Meningitis with Glycosuria Simulating Diabetic Coma. F. E. Taylor and W. H. McKinstry.—p. 182.
12 Recurrent Type of Trench Fever in Mesopotamia. C. F. Coombs. —p. 183.
13 Trench Fever. F. C. Davies and R. P. Weldon.—p. 183.
14 Acute Pneumonia with Hyperpyrexia Followed by Heart Block. J. Porter-Parkinson.—p. 184.
15 Case of Foreign Body in Rectum. N. S. Bonard.—p. 185.

February 10, No. 4876

16 *Five Hundred Emergency Operations for Abdominal Wounds. C. F. Walters, H. D. Rollinson, A. R. Jordan and A. G. Banks.—p. 207.
17 Treatment of Secondary Hemorrhage, with Special Reference to Gunshot Wounds. C. A. Morton.—p. 213.
18 *Types of Tubercle Bacilli in Cervical and Axillary Gland Tuberculosis. A. S. Griffith.—p. 216.
19 *Seventy-Three Cases of Cerebrospinal Fever. S. Neave.—p. 219.
20 *Treatment of Scabies and Some Other Common Skin Affections in Soldiers. H. G. Adamson.—p. 221.
21 Blinded Sailors and Soldiers. A. Lawson.—p. 223.
22 Case of Intestinal Obstruction by Thrombosis of Mesenteric Veins. S. C. Ghose.—p. 224.
23 *Case of Apparent Disappearance of Carcinoma of Cervix. E. C. B. Ibotson.—p. 224.
24 *Case of Sarcoma of Fourth Ventricle. H. M. Galt.—p. 224.
25 Food of the Nation. E. I. Spriggs.—p. 234.

9. **Bladder in Gunshot Injuries.**—Walker says that over 90 per cent. of cases of spinal injury arriving at the Star and Garter Hospital, London, have a serious infection of the urinary tract, and all cases have at some period passed through a stage of severe infection. Of the total 111 patients, nineteen have died, all from urinary infection. At the King George Hospital 339 cases of spinal injury have been admitted, twenty-two were transferred and 160 have died, practically all from urinary infection. Speaking of the treatment of septic complications, Walker has this to say in regard to the newly introduced chlorin preparations. The solutions are intensely irritating to the bladder, and should be used with caution. A solution of 1 in 20,000 is sufficiently strong to use at first, and this may cautiously be increased in strength. Vaccine treatment in Walker's experience has proved of great value in treating the chronic cystitis of these paraplegic cases. Walker advises that in gunshot injuries to the spinal cord an early operation offers the best chance for the patient; that fear of the presence of sepsis need not deter the surgeon from operating; and that not until the surgeon has exposed the

spinal dura mater can he speak with any certainty as to the mode in which pressure is being exerted on the cord. At present all that the surgeon can do is to relieve pressure and to hope that the cord will be able to recover, in part, at least, from the injury which it has sustained. Experience has shown that in a certain proportion of cases of injuries of the spinal cord much may be done, though in others all the surgical knowledge and skill which we now possess are insufficient to do any good.

16. **Operations for Abdominal Wounds.**—An analysis of the first 500 operations for abdominal war wounds is made by the authors. They emphasize the fact that statistics are fallacious; they may show but little difference in the mortality of a series operated on four hours after wounding and another in which eight or nine hours have elapsed. The time element is of the highest importance; an abdominal patient's chances diminish with every hour of delay. The vast majority of patients reached the authors after nine or ten hours, and a large percentage in half that time, but a certain number of cases arrive at much later periods up to three or four days. The treatment of such late cases must be entirely different from the early ones. Every case must be judged on its own merits, but operation thus late has a very high death rate. A good working rule is that a man in fair condition who has been wounded more than thirty-six hours should always be watched, unless there is some clear indication that there is a condition which must be fatal without interference. The only complete contraindication to operation observed by the authors (apart from the condition of the patient) is a complete spinal lesion with paralysis. An almost complete contraindication is a wound of the chest definitely involving the lung (with hemoptysis or surgical emphysema). Such patients' chances are almost always better if left alone. Operation should be confined to such a rare case as where, with protruded viscera or otherwise, a hopeless abdominal condition can actually be seen, and in addition, for some reason, the patient's general condition is reasonably good.

18. **Tubercle Bacilli in Cervical Gland Tuberculosis.**—The number of cases of cervical gland tuberculosis examined bacteriologically by Griffith now is 102. The figures show that in childhood cervical gland tuberculosis is caused more frequently by the bovine than by the human type of tubercle bacillus, nearly three quarters (72.1 per cent.) of the cases in children under 10 years of age having yielded bovine tubercle bacilli. In persons over 10 years of age infection of human origin is more common; bovine infection accounting for about a third of the cases in the 10 to 20 years age period, and for rather less than a fifth of the cases in persons over 20 years of age. The material used in this investigation of cervical gland tuberculosis has been derived mainly from cities and towns in England and Scotland, and, while the cases from the different localities are too few for comparative statistical purposes, it is noteworthy that a proportion of the cases from each center of population has yielded tubercle bacilli of bovine type. If the figures for the whole of England are compared with the combined figures for Scotland, it is found that the proportion of bovine infections in children under 10 years of age is about the same for the two countries. In persons over 10 years, on the other hand, the proportion of cases in which the infection was bovine is much higher in the Scotch than in the English series.

19. **Isolating Meningococcus from Cerebrospinal Fever.**—The meningococcus was obtained by Neave from the cerebrospinal fluid by cultivation in thirty-six out of fifty-five cases, where it was seen in the purulent sediment of the fluid. In one case no organism was seen in the fluid, but a cultivation was successful. In one case no organism was found in the first place, but a cultivation was obtained from the fluid during a relapse a month later. In ten cases the organism was not found, and here the probabilities of a positive diagnosis lay in the clinical tests for meningitis generally, the cytology of the fluid and the clinical symptoms. In one case, while the fluid was clear and no organism was found in it, it was found in a throat swab. An excess of lymphocytes was found several times in a clear fluid that later became purulent. In one case the meningococcus was found alive in the fluid after it had been in the incubator for twenty-three days, but as a rule the organism was very difficult to keep alive on any medium more than half that time. It was found that the fluid for diagnosis drawn from the cisterna magna after death gave better information than that from the lumbar region both in the case of cerebrospinal fever and tuberculous meningitis.

20. **Treatment of Scabies and Common Skin Affections.**—The important points in dealing with cases of scabies, Adamson says, are (1) to make sure of the diagnosis, if possible by finding an acarus; (2) then to carry out a very thorough treatment for a strictly limited period. Doubt in diagnosis often leads to ineffectual treatment; treatment ineffectual but too long continued leads to eczema or sulphur dermatitis and still further confuses the diagnosis. The simplest and most efficacious treatment is to make use of soap and sulphur as follows: saponis mollis, 24 ounces (700 gm.); ung. sulphuris, 24 ounces (700 gm.), enough of each, soap and ointment, for three applications. A hot bath of half an hour's duration is taken on three consecutive days. During the bath the body and limbs, especially the hands and wrists and buttocks are scrubbed with soft soap by a flesh brush. After each bath the patient himself rubs in the ointment and puts on an old sleeping suit, gloves and socks and goes to bed, where he remains until it is time for the bath on the next day. The baths and inunctions must on no account be continued beyond the three days. The patient gets up and dresses after the three days and usually requires no further treatment, but is kept under observation for another three days. If, as sometimes happens, some itching continues he is given the following lotion to mop on night and morning:

	gm. or c.c.	
Liq. picis carbonis	4	ʒ i
Aquae	600	℥ xx

If the treatment has been thoroughly carried out the patient is cured and free from infection after the three baths and inunctions. If a case is not cured in this way, it is probably not scabies, but either a papular urticaria or chronic eczema. For ringworm Adamson uses the following ointment:

	gm. or c.c.	
Acid. benzoici	1	gr. xv
Acid. salicylici	1	gr. xv
Ol. cocois	12	ʒ iii
Petrolati ad	30	ʒ i

In cases in which there is vesication the inunction should be preceded by fomentation with hot water. Many cases quickly clear up with this treatment, but sometimes part of the eruption in the groin, or between the toes, or on the soles remains obstinate, and for these cases a useful treatment is: First thoroughly mop the affected parts with tincture of iodin, then rub on argenti nitratis 10 grains (0.6 gm.), spiritus etheris nitrosis 1 ounce (30 gm.). Repeat this treatment if necessary and apply the benzoic acid ointment between whiles.

23. **Disappearance of Carcinoma of Cervix.**—A woman, aged 45, had her left breast amputated for cancer in 1914. In July, 1916, symptoms of uterine cancer appeared, and also nodules developed in the operation scar, with offensive vaginal discharge tinged with blood, obstinate constipation and vomiting, painful and difficult micturition, and pain in the left sciatic nerve area. She was too weak to stand another operation so extensive as hysterectomy, hence palliative treatment combined with enemas and vaginal douches was all that was done. She has steadily improved. The nodules in the scar disappeared in September, there was nothing abnormal in the cervix, and the uterus is now freely movable. Also the constipation and vomiting have quite ceased. She has still pains in the left sciatic nerve area, and is exceedingly thin. She sits up in a chair daily.

24. **Sarcoma of Fourth Ventricle.**—A girl, aged 14, was admitted to the hospital with a history of having had meningitis some months previously. Apparent complete recovery from the meningitis occurred, but since that time the patient had occasional periods, lasting a few days, during which she appeared to be in a state of coma. In the intervals she appeared to be practically normal, and at no time was there headache, vomiting, paralysis, or any physical sign suggesting the presence of tumor. Death occurred about three weeks

later during one of the spells of coma. At the necropsy there was found a soft tumor about the size of a large walnut, apparently originating in the valve of Vieussens and separating rather widely the two lateral halves of the cerebellum. There was no definite pressure on the floor of the fourth ventricle, and the lateral ventricles of the brain were not distended. The tumor showed several comparatively large recent areas of hemorrhage within it. In structure it was, histologically, a small round-cell sarcoma. There was no visible stroma and no gliomatous elements. The cerebral and cerebellar tissues were normal in structure and all the other organs of the body were normal.

Annales de Gynécologie et d'Obstétrique, Paris

November-December, 1916, LXXII, pp. 321-384

26 *The Surprises of Exploratory Curetting of the Uterus. M. Muret. —p. 321.
27 Necrobiosis of Retained Portion of Placenta. (La nécrobiose placentaire. Contribution à l'étude des prétendus polypes placentaires.) E. Zarate (Buenos Aires).—p. 343.
28 *Hernia through the Vagina. (La hernie vaginale.) H. Hartmann. —p. 351.
29 Partitioning Off of the Pelvis and Thread Drainage. (Le cloisonnement et le drainage filiforme du bassin, et leurs variétés.) H. Chaput.—p. 358.
30 *Advantages of Lumbar Puncture of the Fetus during Breech Presentation to Save the Child. M. R. Costa (Pavia).—p. 367.

26. **The Surprises of Exploratory Curetting in Diagnosis of Uterine Cancer.**—Muret comments on the baffling cases in which the curet brings evidence of malignant disease but then further curetting and even microscopic examination of the uterus removed soon after fails to reveal a trace of cancer. In one of the four cases of this kind which he reports the curet brought scraps of an unmistakable adenoma-papilloma-carcinoma of the body of the uterus. The uterus was removed but then, even with the microscope, it was impossible to find a trace of carcinoma in the organ. Two years later a tumor developed in the left ovary of exactly the same structure as the scraps curetted from the uterus. It was evidently a metastasis, and the patient succumbed to the malignant disease. The microscopic examination had been made at a two years' interval, and by different pathologists, the concordance between their reports on the histologic structure of the growths thus confirming Muret's view as to the metastasis. Even one case of this kind should convince the most skeptical of the possibility of the curet's scraping out entirely an incipient carcinoma; even a nonpedunculated tumor. Muret cites others who admit the possibility of this occurring. In another case in his experience, the exploratory curetting gave positive findings but nothing malignant could be found in the extirpated uterus at first. Renewed search finally revealed unmistakable signs of malignant disease. This case teaches that negative findings are not conclusive unless microscopic sections have been examined from all parts of the uterus. In another group of four cases from the literature and one in Muret's practice, the positive curet findings were not followed by removal of the uterus, and yet the patient has had no further signs of trouble. It is theoretically possible that the curet actually removed every scrap of the tumor; this is possible with a polypoid tumor or other small superficial growth. But this is so exceptional, and the fact that a clinical cure is not always an anatomic cure, imposes the necessity for removal of the organ with any suggestion of malignant disease. At the same time, he emphasizes that it is useful for physicians to know that such cases can occur, so that they will not think they had made a mistake in their previous diagnosis. In another group of cases, of which he relates an example, the most painstaking curetting failed to reveal the presence of cancer but, the severity of the symptoms having compelled hysterectomy, unmistakable malignant disease was found at some point that had escaped the curet. His patient was a woman of 42 who had borne two children. There were two foci of cancer, and both had developed at such a depth in the wall of the uterus that the curet gave no signs of their existence.

28. **Vaginal Hernia.**—Hartmann compares with the few cases on record of what is generally called pudendal hernia, a case of true vaginal hernia in a woman of 30. Eight years before she had had the perineum lacerated at the birth of her first child, and this had been followed by supposed genital prolapse requiring operative treatment. The supposed prolapse recurred at a second pregnancy and again at the third, and it was found that the trouble was a hernia in the pouch of Douglas, the lax vaginal walls permitting the tumor to protrude from the vulva. The trouble then was easily corrected by reducing the bowel and taking two stitches to close the pouch of Douglas on a level with the uterine cervix. The woman has passed through another normal pregnancy since but forceps were required. In all the cases on record of vaginal hernia, plastic operations to correct the supposed genital prolapse had proved ineffectual to ensure a permanent cure. The vaginal enterocele developed anew after anterior fixation of the uterus; or after this and anterior colporrhaphy. The anterior fixation of the uterus may possibly have contributed to favor the sliding down of the intestine into the pouch of Douglas.

30. **Lumbar Puncture of Fetus with Breech Presentation as Aid to Safe Delivery.**—Costa's favorable experience with this measure has already been described in THE JOURNAL, Oct. 14, 1916, p. 1190. He does not aspirate the fluid; it spurts spontaneously as the head is compressed. He regards this measure as indicated when there is danger to apprehend severe compression of the head with pelvic presentation with insufficiently dilated os or deformed pelvis.

Bulletin de l'Académie de Médecine, Paris

January 16, LXXVII, No. 3, pp. 63-101

31 Prophylaxis of Diphtheria in the Schools. E. Mosny.—p. 66.
32 *Extensive Resection for Chronic Ulcer of the Stomach. Témoin. —p. 75.
33 The Medical Department of the Army at Far Eastern Firing Line. (Fonctionnement du Service de Santé à l'armée d'Orient.) Picqué.—p. 84.
34 Improved Technic for Roentgen Localization of Projectiles. (Nouveau compas localisateur chirurgical à réglage direct sous l'écran radioscopique.) J. Abadie.—p. 86.
35 The Ear Reactions in Aviation. (Les réactions de l'oreille chez les aviateurs pendant les Vols.) P. Lacroix.—p. 84.
36 *Apparatus for Treatment of Myopia. Bacchi.—p. 97.

32. **Chronic Gastric Ulcer.**—Témoin analyzes the clinical picture and outcome in 186 operative cases of chronic ulceration in the stomach. The return of symptoms after gastroenterostomy or meager resection was of such frequent occurrence that he now makes a practice of extensive resection. He expatiates here on the numerous and important advantages of thus doing away with the entire diseased area and its possible complications later, while the stomach is left a vertical canal which cannot breed intoxication. The outcome has been most satisfactory in every one of the 117 cases in this class. He adds that the technic he describes is free from danger. The stomach must be released from all adhesions. Another feature of his technic is that he loosens up the vessels from the stomach wall before resecting it, leaving the vessels intact; they are easily detached from the wall, rubbing them loose with a compress.

36. **Mechanical Treatment of Myopia.**—Bacchi gives an illustrated description of an apparatus which exerts pressure directly on the eyeballs, aiming to shorten and widen them. He describes favorable experiences with it, the myopia being materially improved after a few sittings at all ages.

Correspondenz-Blatt für Schweizer Aerzte, Basel

January 20, XLVII, No. 3, pp. 65-96

37 *Serotherapy of Acute Febrile Jaundice. (Zur Serumbehandlung der Weil'schen Krankheit—Spirochaetosis icterohaemorrhagica Inada.) Inada, Ido, Hoki, Ito and Wani.—p. 65.
38 *Electrotherapy in Heart Disease and Arteriosclerosis. (Behandlung von Herzkrankheiten und Arteriosklerose mit Kondensatorströmen.) H. Weber.—p. 73.
39 *The Reflex-Eliciting Zone for the Cremaster Reflex. A. Rodella. —p. 85.

37. **Serotherapy of Acute Febrile Jaundice.**—This article brings down to date the research of these Japanese investigators. The immune serum they use is from the horse; 0.01 c.c. protects a guinea-pig against 1 c.c. of a pure culture (ten spirochetes in one microscopic field), injected at the same

time into the peritoneum. The serotherapy has been applied in thirty-five clinical cases; 50 per cent. were severe cases. The results showed that the serum in doses of 40 or 60 c.c. destroyed the spirochetes in the blood in from five or six to twenty-four hours. The mortality was 11.4 per cent. It had previously averaged 30.6 per cent. in this clinic, and elsewhere in Japan 40 or 48 per cent. The various findings are tabulated, but the most conclusive testimony as to the value of the serotherapy is afforded by the case of a man of 65 taken suddenly ill. The fourth day sixty-five spirochetes were found on one cover glass, in seventy microscopic fields. Then 17 c.c. of the immune serum was injected subcutaneously and 20 c.c. intravenously five hours later. Two hours after this no spirochetes could be found on repeated examination every two hours. A guinea-pig inoculated the fifth hour with 2 c.c. of the patient's blood has shown no signs of illness during the ten days since. Inoculation of another guinea-pig the twelfth hour with 3 c.c. of blood has also been negative. The results in this case confirmed in every respect the results obtained in the experimental research on guinea-pigs.

38. **Electrotherapy of Heart Disease and Arteriosclerosis.**—Weber remarks that with electrotherapy we are now realizing results unachievable with repose and digitalis alone in heart disease and arteriosclerosis, and not even when supplemented with massage, gymnastics and carbonated baths. The electric current has long been utilized in strengthening subnormal muscles, and failing compensation is nothing but muscular insufficiency. The same can be said of the walls of the vessels, and Weber cites a recent writer to the effect that electricity in the form of the interrupted current is an actual specific against vascular disturbances, relieving spasms, and transforming paresis to normal conditions. Weber prefers what he calls the condensator current, and reports here nineteen cases in which he treated patients with cardiovascular trouble with this form of galvanic electrotherapy. Lost compensation, an extremely irritable nervous system, and contracted kidney are about the only contraindications. He tests the heart functioning by having the patient hold his breath in the midst of quiet breathing. Figures below thirteen or fifteen seconds strongly suggest insufficiency of the heart musculature. Another test is the difference between the pulse reclining and standing. If the heart is working normally, the pulse becomes slower after a change from the vertical to the horizontal position. His third test is Herz' auto-inhibition, that is, the patient slowly flexes his right arm at the elbow, and then extends it again, concentrating his entire attention on the procedure. The pulse before and after shows little difference if the heart is sound, but with myocardial disease the pulse is materially retarded. With nervous heart affections, on the other hand, it is much accelerated.

39. **The Cremasteric Reflex.**—Rodella relates that in about 30 per cent. of the persons he has examined, the cremasteric reflex could be elicited by stroking the sole of the foot, the same as with the usual technic. The proportion of cases is still higher in which it could be elicited in this way on one side alone. This plantar cremasteric reflex was most pronounced in patients with sciatica.

Medizinische Klinik, Berlin

December 31, 1916, XII, No. 53, pp. 1385-1392

40 War Wounds of the Knee. (Erfahrungen über Kniegelenkschüsse, insbes. über primäre Gelenknaht.) H. Klose.—p. 1385.
41 *Tincture of Iodin in Treatment of Erysipelas. W. Keppler.—p. 1387.

41. **Tincture of Iodin in Treatment of Erysipelas.**—Keppler asserts that a 10 per cent. solution of iodin generally has a prompt and certain curative action in erysipelas, as he has proved by ten years of experience in a septic ward. He calls attention further to the fact that during his entire service in the field since the war began he has encountered only one case of erysipelas, and none at all have been encountered by other surgeons of whom he has enquired. He suggests that the custom of prompt iodin treatment of the wounds may be responsible for this rarity of erysipelas. It is the rule to paint the region around the wounds anew with tincture of iodin each time the dressings are changed.

Münchener medizinische Wochenschrift, Munich

December 12, 1916, LXIII, No. 50, pp. 1749-1784

42 *War Diet Advantage for Some Children between Two and Six. (Kleinkinderkost im Kriege.) M. Pfaundler.—p. 1749.
43 *Lumbar Puncture in Treatment of Epidemic Meningitis. F. Riedel. —p. 1751.
44 *Treatment of Nephritis. H. Machwitz and M. Rosenberg.— —p. 1752. Continuation.
45 Staphylococcus Vaccine Therapy of Furunculosis. Doctor.—p. 1755.
46 *Medical Examination of Candidates for Matrimony. (Aertzlicher Ehekonsens und Eheverbote.) Trumpp.—p. 1756.
47 *The Hypophysis As Regulator of Diuresis and of the Specific Gravity of the Urine. H. Bab.—p. 1758. Commenced in No. 48.
48 Artificial Arms and Legs under Muscular Control from the Stumps. (Weitere Fortschritte in der Verwendung willkürlich beweglicher Prothesen für Arm- und Beinstümpfe.) F. Sauerbruch. —p. 1769; (Neue Wege zur Schaffung aktiv beweglicher Prothesen der unteren und oberen Extremität.) H. Plagemann. —p. 1772.
49 Training in Pronation and Supination for Long Stump of Forearm. H. Spitzy.—p. 1770.
50 *Nephritis in the Field. E. Magnus-Alsleben.—p. 1774.
51 "Five-Day Fever." (Zur Kenntniss des Fünftagefiebers.) W. Thörner.—p. 1775.
52 Malaria Dangers and Their Prevention. W. Wick.—p. 1777.
53 *Simplification of Operation for Inguinal and Scrotal Hernia. (Methoden zur Vereinfachung der Radikaloperation der indirekten Leistenhernien und Leistenhodenbrüche.) Hoepfl.—p. 1777.
54 Injuries from Air Torpedoes. (Verletzungen durch das Lufttorpedo.) G. Kelemen.—p. 1778.
55 Cuff to Correct Paralysis of the Flexor Digitorum. (Eine Faustschlussmanschette.) E. Kröber.—p. 1778.
56 Support for Flatfoot. (Ein Fussstutzriemen für plattfussleidende Soldaten.) W. Wolff.—p. 1779.
57 Hammock Bed. (Neues Feldbett für Heereszwecke.) Huntemueller.—p. 1780.
58 Hygiene of Field Latrines. (Zur Hygiene des Stellungskrieges. II.) K. Hannemann.—p. 1781.
59 *Spiral Springs to Drain Fistulas. D. Sarason.—p. 1782.
60 *Micromethod for Determination of Albumin Content of Urine. E. Deiters.—p. 1782.
61 Indemnity for Traumatic Neuroses. (Die Versorgung der funktionellen Kriegsneurosen.) Hoche.—p. 1782.

42. **The War Diet and the Children.**—Pfaundler shows that the food now available for children between 2 and 6 conforms closely to the diet that has long been advocated as an auxiliary means to correct inherited taint and ward off spasmophilia, etc.

43. **Lumbar Puncture in Meningitis.**—Riedel reports the prompt and complete recovery of four out of five soldiers with epidemic meningitis treated with lumbar puncture and withdrawal of enough fluid to restore the pressure to normal, repeating this daily as long as necessary, changing the site each time. No by-effects were noted, but the disease ran its usual four or five weeks' course. His experience has convinced him that the abnormal pressure is the most serious factor in the symptoms. In one case he repeated the puncture eighteen times. At the tenth day the pressure was still 410 mm., but then soon dropped to normal.

44. **Treatment of Nephritis.**—This communication from Umber's clinic gives the minute details of several cases of edematous nephrosis to show the prompt benefit under restriction of salt and water. The article is to be continued.

46. **The Physician and the Marriage of the Unfit.**—Trumpp insists on the necessity of a medical examination for candidates for matrimony, and outlines a plan to render it feasible. He also outlines a campaign for educating the public to the necessity of getting married and raising good families, paying more attention to physical and mental qualities than to name and fortune, and emphasizing the evils from marrying a mate physically or mentally below par.

47. **The Hypophysis as Regulator of Diuresis.**—Bab states that his experimental and clinical research has confirmed the assumption that the flow of blood through the kidneys, and hence the diuresis, are influenced by hormones from the glands with an internal secretion. The hypophysis seems to act as a central station, so far as the physiologic functions of the urogenital system are concerned, regulating this hormone action. When this regulator is working inadequately, pathologic polyuria is liable to develop, as in diabetes insipidus. Subcutaneous injection of extract of the posterior lobe of the hypophysis restores to normal the inadequate regulating

function, and the pathologic polyuria subsides, while the specific gravity rises and the general health improves. By the mouth, the extract has no action, and its effect lasts only while it is in the system, no durable action being apparent. Tests with extracts of other glands showed them to be inert in this respect. The hypophysis extract modifies the concentration of the urine not only in diabetes insipidus, but also in other affections. He adds that in diabetes insipidus the kidneys are to be regarded as sound, because as soon as normal functioning is restored, they behave in every respect like sound kidneys. Injury of the hypophysis in animals entails polyuria. This is not observed with injury of any other of the ductless glands, but suprarenal extract is also able to increase the specific gravity. In Addison's disease, the hypophysis is intact and thus presides over the diuresis, preventing polyuria notwithstanding the destruction of the suprarenals, the hypophysis being evidently the commanding officer. The direct or indirect participation of the hypophysis in affections with a tendency to retention of water (dropsy, hydrocephalus and hydramnion), calls for further study. He suggests that as the diuresis-regulating function of the hypophysis seems to work automatically and always along the same lines, it might be possible to utilize persons with pronounced diabetes insipidus for standardization of hypophysis extracts. Bab is assistant at the second university gynecologic clinic at Munich, and he reports a number of cases of diabetes insipidus and also of adipose-genital dystrophy to illustrate the action of the hypophysis extract.

50. **Nephritis in the Soldiers on Active Service.**—Magnus-Alsleben says that the nephritis in question is proving to be merely the familiar acute glomerular nephritis with a tendency to edema, such as we see after scarlet fever. Experience has shown further that moving is bad for these cases, and now they are kept at the one hospital till cured. About half the men had a high blood pressure, 150 to 180 mm. mercury, but recovery was complete at last, except that the urine still showed a little albumin, a few casts and a few red corpuscles. These findings in the urine kept up even after two or three months' quiet in bed, with exacerbations in a few cases. Aiming to spare the diseased partial function, the amount of fluids allowed was calculated strictly according to the output of urine, and the nitrogen and salt in the food were materially restricted, although the supply of calories was ample. The favorable influence of this function-sparing diet was remarkable. Copious diuresis soon set in, without other measures, and the blood pressure dropped to normal. In the last fifteen cases he gave the men absolutely nothing to eat or drink for three or four days and then let them drink copiously. This is Volhard's method of treating nephritis in soldiers; he claims that a flood of diuresis follows and the blood pressure drops at once. But Volhard's assertions were not confirmed in his experience. The flood of diuresis did not always follow, and when it did appear, the blood pressure did not always decline, so that the results were disappointing and this method is now abandoned.

53. **Improved Technic for Hernia Operations.**—Hoepfl remarks that the war has made it necessary to operate in large numbers of cases in which in ordinary circumstances operative measures would never have been required. His extensive experience with indirect inguinal hernias has shown that considerable advantages result when the hernial sac is slit crosswise and the lower half is left. He does not draw the hernial sac out, but pushes aside the tissues around and incises the hernial sac about on a level with the anterior inguinal ring, aiding reduction of the contents of the sac by raising the pelvis. The side ends of the incision are then drawn apart with forceps which brings up the posterior wall of the hernial sac in a transverse fold, which is then slit its entire length. The proximal and the distal cut edges are then seized and raised with forceps, and the upper half of the hernial sac is then separated from all adhesions down into the internal inguinal ring. It is sutured to close it, and it is then allowed to slide back; the operation is completed with Bassini's or Girard's technic, leaving the lower half of the hernial sac unmolested throughout. For congenital hernia with intra-abdominal testicle, the invagination method has given best results, as he describes in detail.

59. **Spiral Spring for Fistula Drain.**—Sarason comments on the difficulty in inserting a tampon to drain a winding fistula, and also the disadvantages of a stiff rubber drain. He has found extremely useful for the purpose a finely twisted wire spiral spring. This adapts itself to the fistula, while there is nothing to obstruct the outflow of secretions. The end is provided with a floor, so that it will hold a guide, and can thus be readily introduced into the narrowest fistulas, ensuring keeping them open to the air.

60. **Micromethod Test for Albumin in the Urine.**—Deiters relates that the findings are more distinct when a small amount of urine is used, as he describes. An ordinary test tube is heated until the rounded bottom can be pushed in to make a small ball-shaped or conical depression in the lower end of the test tube. This can be treated with six or eight drops of nitric acid and the urine poured on top as usual. The turbidity resulting is more distinct than with the ordinary technic, as more light gets to the fluid in proportion to the amount of the fluid. The findings are distinct, even at 1 : 200,000.

Wiener klinische Wochenschrift, Vienna

December 21, 1916, XXIX, No. 51, pp. 1611-1642

62 *Parenteral Injection of Albumin. (Beiträge zur Proteinkörpertherapie.) W. Weichardt.—p. 1611.
63 Malformed Ears and Eyebrows as Signs of Degeneracy. (Die Bedeutung der Ohrmuschel und der Augenbrauen, sowie anderer Abnormitäten für die geistige Beurteilung eines Menschen.) S. Suchy.—p. 1614.
64 Traumatic Neuroses and War Hysteria. E. v. Nesnera and E. Rablorzky.—p. 1616.
65 *The Precipitation and Wassermann Tests after Supposed Abortive Treatment of Syphilis. A. Perutz.—p. 1619.
66 *Prophylaxis of Venereal Diseases. (Zur Bekämpfung der Geschlechtskrankheiten.) H. Hecht.—p. 1622.
67 *Study of Bergell's Reaction. G. Raudnitz.—p. 1623.
68 *Improved Technic for Percussion and Auscultation. J. Tornai.—p. 1625.
69 *Jaundice in Soldiers. (Zur Frage der Gelbsucht an der Front.) B. Schwarzwald.—p. 1639. Conclusion.

62. **Parenteral Injection of Albumin in Therapeutics.**—Weichardt here reports further laboratory research on the principles of what he calls "protein body therapy." He gives a brief historical review of the work that has been done by himself and others in this line, and emphasizes the practical importance of the exactly opposite action of small and large doses of the parenterally introduced protein substances. Bessau has recently pointed out that the favorable therapeutic action in infectious diseases corresponds to Pfeiffer's old conception of means to increase the resisting powers. R. Pfeiffer declared that many kinds of interventions in acute infections induced an immediate increase in the resisting power. Bessau further insisted on the importance of inflammatory processes in the cure of infectious diseases. Weichardt has been studying the action of the higher molecular products of the splitting of albumin, as they act on isolated organs and systems of organs, either increasing their functional capacity or reducing it. He has tested them on the isolated heart of the frog, also in the test tube, and gives a number of charts showing the action of a 0.005 per cent. solution of a blood clot, filtered. The results showed that the blood-producing system can have its chemical functional capacity (*chemische Leistungsfähigkeit*) materially increased by minimal doses of albuminoid substances, and also by other substances. This probably is the explanation for the improved functioning under injections of salt solution to which Engländer has recently called attention as a therapeutic principle. Weichardt reports further the action of succinimid in this line; under its influence the paralyzing products of metabolism seem to be destroyed more rapidly. He calls the substances, including succinimid, which act in this way "retardins," as they retard the fatigue process. The whole comes under the general biologic law of activation of protoplasm, and he is convinced that this plays an important part in the living organism. In respect to the practical application of this protein body therapy in the clinic, he warns that in his experiments with intravenous or subcutaneous introduction of the albuminoid sub-

stances, he frequently noted in animals the development of a chronic condition of cachexia, the weight progressively declining and the temperature showing slight fluctuations. Some of the animals threw off the cachexia finally but others died. The cachexia-inducing property of the parenterally introduced albumin products seems to be connected with their constitution. Dold as well as Weichardt has called attention to this "proteinogenous cachexia."

65. **Serodiagnosis of Syphilis.**—Perutz tabulates the findings in fifty cases of recent syphilis tested repeatedly with the Porges-Herman-Perutz precipitation test and also the Wassermann test, before, during and after the so-called abortive treatment. The data show that the course of treatment never actually aborted the syphilis whenever these tests still elicited a positive reaction, even although no symptoms of syphilis could be detected at the time. The syphilis progressed also in all but one of the nineteen cases in which the precipitation test was positive, although the Wassermann was negative. But in fourteen cases in which both tests were negative there have been no manifestations from the syphilis since. His findings show further that the precipitation test reveals generalization of the syphilis at a much earlier stage than is possible with the Wassermann test. It is positive also in a much larger proportion of cases in the primary phase of the disease. A negative Wassermann before starting treatment is no guarantee that the abortive course is destined to cure the disease, and it does not guarantee that the syphilis is not already generalized. The most favorable conditions for successful abortive treatment are when both the precipitation and the Wassermann tests fail to elicit a response.

66. **Prophylaxis of Venereal Diseases.**—Hecht writes from barracks near Prague that the custom of giving the men a brief leave of absence just before they set out for the front is responsible for the fact that when they return they have to go to the hospital instead of starting out on the long march. He insists that leave of absence for a visit home should never be granted to a man who has acquired venereal disease during his service or who is still in the first years of the disease. It is fortunate, he says, that the military authorities have it thus in their power to prevent the man's infecting his family. In his corps, records are kept now of every man with venereal disease, and a certain mark opposite the name of a man on the register indicates that in no circumstances is he to be granted home leave. This seems cruel, but in the long run it is kind. This restriction of home leave is already enforced for typhoid carriers. Hecht adds that no one seems to class the venereal diseases with infectious diseases, but this neglect to apply the measures that have been found reliable with other infectious diseases will avenge itself sooner or later.

The number of syphilitics in the army now must certainly be several hundreds of thousands. They are being treated in hospitals, while sound and healthy men are being shot down in their stead. This actually places a premium on sexual infection, for the healthy have no chance of a few months' respite in the hospitals from the fighting. The effect likewise is to spare the syphilitics while the sound get killed off. He suggests that the diagnosis should be the signal for sending the man to the front. This would have a deterrent effect; at present many prefer to take their chances with syphilis, rather than with the enemy's shells. It might be possible to form special companies of syphilitics, as soon as the ulcers have healed over, so that the treatment could be conveniently continued and applied on the firing line, while infection of other troops would be prevented. Neisser long insisted that courses of salvarsan and mercury could be given perfectly well in the trenches. Hecht declares that it is impossible to reiterate too often the frightful danger for the populace from syphilitics in the primary phase. They have many chances for infecting others in a garrison town, but on the firing line they are comparatively innocuous, and this from every point of view has its advantages. Since the war began, a total equivalent to sixty divisions have been temporarily withdrawn from the fighting for venereal diseases. In conclusion, he insists on the necessity for enlightening the public in regard to the danger of venereal disease in candidates for matrimony. He endorses Zinsser's suggestion that the daily papers should carry a big display advertisement something like this: "Beware of Sexual Diseases. Every young couple should mutually demand a certificate of good health before the wedding." He would like to render this certificate obligatory for all.

67. **The Bergell Reaction.**—THE JOURNAL described Feb. 6, 1915, p. 550, Bergell's copper sulphate urine test alleged to reveal a predisposition to diabetes even before it has actually developed. Raudnitz has applied the test to the urine of sixty-seven children and adults including nine children of a diabetic parent. The findings for all are tabulated. The index was high in febrile patients, but the children from diabetic families did not have a specially high index. Only six children from diabetic families were discovered among 15,000 Jewish refugees. Raudnitz is inclined to agree with Seegen that the supposed prevalence of diabetes in Jewish families is due to the fact that the Jews affected with it, or fearing it, flock to the specialists, while other classes of the population seldom go to the trouble and expense of a trip to the specialist or health resort.

68. **The Phonoscope.**—Two illustrations are given of Tornai's improved phonograph-stethoscope which magnifies the sounds heard on percussion and auscultation.

69. **Jaundice in the Troops.**—Schwarzwald says that the *Frontikterus* he has encountered so often is a mild, transient, almost secondary disturbance, occurring practically exclusively in men under the conditions of trench life. Troops under conditions permitting greater opportunities for respite and relief, did not develop this "firing line jaundice." Cases were rare also when there was active fighting. It seemed to be the monotonous trench life that predisposed it, superposed on the longing for home that became almost unbearable as the spring opened. In only seven of the fifty cases examined was there a history of severe fright from a shell explosion. This psychogenous jaundice seems to confirm the importance of nervous factors in the functioning of the liver.

Riforma Medica, Naples

1916, XXXII, No. 44, pp. 1201-1228

70 *Diagnosis of Cancer of the Liver. (Diagnosi dei tumori maligni del fegato.) A. Ferrannini.—p. 1201.
71 Tuberculous Meningitis Simulating Sclerosis in Patches. A. Camarata.—p. 1208.
72 Present Status of Diagnosis, Treatment and Prophylaxis of Typhus. U. Gabbi.—p. 1213.

No. 45, pp. 1229-1250

73 Action of Toxins of Fatigue on Certain Internal Organs. L. Ferrannini and S. Fichera.—p. 1229.
74 Poisoning from Asphyxiating Gases. P. Sisto.—p. 1234. To be continued.
75 Substitute for Salvarsan. (Sul Luargol. Il nuovo antisifilitico di Dauysz.) G. Pollio and C. Rühl.—p. 1238. Commenced in No. 44, p. 1205.

70. **Diagnosis of Cancer of the Liver.**—Ferrannini says that when it is difficult to decide whether the liver trouble is malignant or merely echinococcus disease, the age over 50 speaks in favor of cancer; also the sudden onset of intense pain in the liver region, the enlargement of the liver and discovery of hard bunches in it. Also the absence of eosinophilia and of leukocytosis in general, the reduction of nitrogen and increase in urobilin in the urine, the coexistence of stomach trouble, similar to what is observed with gastric cancer, although in fact the stomach may be entirely free from involvement in the malignant disease. The cancer is more liable to be a sarcoma than a carcinoma if there are no extra-abdominal metastases, no ascites and no jaundice.

Brazil-Medico, Rio de Janeiro

December 30, 1916, XXX, No. 53, pp. 417-424

76 *The Contradictory Facts in Regard to Antitoxin Treatment for Diphtheria. (Factos contradictorios sobre a sorotherapia antidiphterica.) O. Clark.—p. 417. Commenced in No. 50.—p. 394.

76. **Antitoxin Treatment of Diphtheria.**—Clark's statistics from various countries emphasize anew the vital importance of commencing treatment of diphtheria at the earliest possible moment. The early diagnosis is the main thing. He mentions parenthetically that at Rio de Janeiro diphtheria

is exceptionally mild and rare. Some statistics recently published, covering the last forty-six years, show an annual average of only forty-three deaths from diphtheria.

Acta Scholae Medicinalis Univ. Imp. in Kioto

1916, I, No. 3, pp. 283-411. German and English Edition. Last indexed August 5, 1916, p. 474

77 *The Chemical Composition of the Placenta. I and II. (Ueber die N-haltigen Extraktivstoffe der menschlichen Placenta.) T. Harada.—p. 283. (Ueber die Bildung von d-Milchsäure bei der Autolyse der menschlichen Placenta.) Id.—p. 291.
78 *The Chemical Composition of Ovaries. (Ueber Fermente in Corpora lutea der Kuhovarien und in der von den ersteren befreiten Ovarialsubstanz.) Y. Taniguchi.—p. 299.
79 *Physiologic Studies on Spermatozoon, Especially its Life Duration. S. Ochi.—p. 341; On the Life Duration of the Horse Spermatozoon outside of the Body. S. Sato.—p. 361. (In English.)
80 Behavior of Grape Sugar in Hen's Egg during Incubation. (Ueber das Verhalten des im Eierklar sowie im Dotter Vorhandenen Traubenzuckers bei der Bebrütung der Hühnereier.) G. Sato.—p. 375.
81 On the Effect of Osmotic Pressure. IV. The Relation between Osmotic Pressure and Electric Resistance of the Nerve. H. Tanemura.—p. 381. (In English.)
82 *Physiology of Osmotic Pressure. V. (Ueber den Parallelismus der Erregbarkeit und der Leitfähigkeit.) R. Shoji.—p. 395.

77. **The Chemical Composition of the Placenta.**—Harada describes his research on 120 freshly expelled placentas which resulted in the discovery of the presence in the placenta of xanthin, adenin, arginin, histidin, cholin, lysin, uracil, leucin, alanin, prolin, glutaminic acid, and possibly of hypoxanthin and phenylalanin. In a second communication he asserts that d-lactic acid is formed during autolysis of the human placenta.

78. **The Ferments of the Cow Ovary.**—Taniguchi reports that several ferments, which he enumerates, were found in the corpora lutea and also in the other parts of cows' ovaries, but several others which might have been expected were not detected.

79. **How Long Can Spermatozoa Live Outside the Body.**—Ochi experimented with the spermatozoa of white mice, studying the effects of physical and chemical stimuli on them, especially the effect of alkaline and acid solutions, of temperature, light, osmotic changes, the nonelectrolytes, the action of ions, of nitrogen, oxygen, hydrogen and carbon dioxid, and of changes in atmospheric pressure. The most favorable conditions for long survival were when the animal was mature and well nourished, and the spermatozoa were kept at room temperature (22.5 C. or 72 F.) in a 3.3 per cent. solution of dextrose. A 0.7 per cent. solution of sodium chlorid seemed to have practically the same effect. He ascribes it to the osmotic tension. Acidity at any concentration was found injurious, a 0.02 per cent. solution of hydrochloric acid arrested at once the movements of the spermatozoa.

Sato reports research with the spermatozoa of horses, saying that artificial fertilization has proved so successful in horticulture that florists can now send pollens to a distance for crossbreeding of plants. He adds—both Ochi and Sato write in English—"As to an animal, such a practice as this is not only so difficult but also religious and moral prejudices of the people have greatly hindered its progress in this line. Recently, however, religion has lost its influential power and the views on morality have become reveral. And many are making effort to improve national wealth and happiness from economical and military view points. Therefore the prejudice on the artificial fertilization of the animal has removed to some extent." He gives eighteen tables of details as to the various experiments made showing the length of the survival of the spermatozoa in various mediums and under different conditions. The moment when all active movements ceased was taken for the limit, but he found that application of warmth, when they had been kept at room temperature for five or six hours, sometimes revived part of them so that they resumed active movements, but this never lasted for more than thirty minutes at most. The most favorable conditions to keep them alive outside the body were found to be a temperature of 13 or 15 C. (55.4 and 59 F.) with an osmotic tension corresponding to a 5.2 per cent. solution of dextrose. In this solution the spermatozoa maintained active movements for from ten to thirty hours, to a maximum of seventy hours.

82. **Physiology of the Osmotic Pressure.**—Shoji discusses in this fifth report on his researches the parallelism between the excitability and the conducting power of a nerve. They do not seem to be two separate attributes of the nerve, but seem to be of the same nature.

Russkiy Vrach, Petrograd

1916, XV, No. 45, pp. 1057-1080

83 Patches of Atrophy of the Skin in Adult. (Poikilodermia atrophicans vascularis Jacobi.) V. I. Terebinsky.—p. 1057.
84 Congenital Absence or Retroperitoneal Location of Vermiform Appendix. (Vrozhdennoe otsutstvie cherveobraznago otrostka, etc.) A. M. Nikolsky.—p. 1061.
85 *Dietetic Treatment of Rachitis. I. A. Shabad.—p. 1067. Concluded.
86 Extension in Treatment of War Injuries of the Spine. (O traum. povrezhdeniakh pozvonochnika.) S. M. Dukhovsky.—p. 1070.
87 War Wounds of the Skull. (Ognest. raneniakh cherepa.) M. S. Astroff.—p. 1074. To be concluded.
88 *Treatment of Cholera in Children with Intravenous Infusion of Saline. M. D. Tushinsky.—p. 1077.

85. **Dietetic Treatment of Rachitis.**—Shabad is in charge of the children's clinic at Petrograd where his extensive research on rachitis has been done. In this communication he gives the results of the mixed diet—with very little milk—advocated by Czerny-Keller, comparing the metabolic findings with those on a diet of unlimited milk and bread, both in periods with and without cod liver oil. The intake and outgo of calcium, phosphates and nitrogen during each period are also compared for each, several tables showing under ten headings the various findings under the test diets. All the testimony is in favor of unlimited milk with bread. The children assimilated and retained calcium better and gained in weight, and all the metabolic findings were more nearly normal on the milk *ad libitum*, and the benefit was still more pronounced when cod liver oil was given with it. The two children were not quite 2 years old, and the cod liver oil was given in a teaspoonful dose twice a day. The fact that the children seemed to do a little better on the Czerny-Keller mixed diet when cod liver oil was given with it shows, he declares, that this diet (241 gm. milk; 247 gm. soup; 512 gm. tea; 138 gm. bread; 85.5 gm. cutlet, and 332.2 gm. mashed potatoes in the course of the twenty-four hours), lacks essential therapeutic efficacy, while the children are unable to utilize it as well as plain milk and white bread.

88. **Intravenous Infusion of Saline in Cholera in Children.**—Tushinsky infused from 400 to 2,000 c.c. of a 6.5:1,000 solution of sodium chlorid, according to the age of the child, and thirty of the forty-four over 3 years old recovered. The four under 3 all died, and nine of the fourteen between 3 and 5. In these thirteen fatal cases in children under 5, all but three were in the algid phase when first seen. Other children with the severer form of cholera, not treated with these intravenous infusions, developed a hornlike dryness of the tissues, entailing superficial lesions. Nothing like this was observed in the infusion-treated children. The epidemic of cholera in question developed slowly until there were 654 cases, and then it suddenly died out. The hardships of the refugees were as severe as before; nothing had been changed in regard to the water supply, and there was no central water supply to be incriminated, as in classical epidemics of cholera at Hamburg and at Petrograd. The epidemic did not develop with many cases at once but spread slowly—a typical example of a contact epidemic, presupposing a protracted course. But, instead of that, after six or seven weeks the epidemic suddenly died out. Tushinsky thinks there is only one explanation possible for this course of the epidemic, namely, that so many persons had been vaccinated against cholera that the epidemic died out for lack of fuel.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

December 23, 1916, II, No. 26, pp. 2245-2320

89 *Cancer Mortality in the Netherlands. (Kankersterfte in Nederland.) H. T. Deelman.—p. 2251.
90 *Bile Pigments in the Urine. (Onderzoek op galkleurstoffen in de urine.) L. de Jager.—p. 2271.
91 *Congenital Absence of Hair with Atrophic Condition of Skin and Its Appendages in Boy of Five: Progeria. J. C. Schippers.—p. 2274.

89. **Cancer in the Netherlands.**—Deelman's statistics are presented in charts for ready comparison. The average mortality from cancer in the years 1909 to 1914 in the various towns and districts are shown in graded maps per 10,000 inhabitants. The range is from 4.5 to 16.6: 10,000. Only 4 per cent. of the deaths from cancer were in persons under 40. The range otherwise is from 23.5 to 52.5: 10,000 inhabitants over 40. He presents further statistics from physicians who have practiced continuously in one district with a steady population of about 24,000. One had eighty-six cancer cases, 1885 to 1889, and 168 in 1910 to 1914. A similar increase is apparent over the entire country; cancer is recorded as the cause of death in 80 per cent. more cases than twenty-five years ago. The data cannot be explained by assuming that in certain regions there are more elderly persons. The increase is a trifle less pronounced in the cities than in the rural districts, and in the regions at the mouth of the large rivers the increase is less than 50 per cent. Otherwise no connection between the lay of the land and incidence of cancer could be detected. He gives other charts which show that the relative proportions of cases of cancer of the stomach, liver, intestine, sexual organs and mamma, in both men and women, keep within a certain range throughout the different districts, showing comparatively little relative fluctuation. The conclusion from the whole study is that the increase in cancer in the last twenty-five years is real and not due to better methods of diagnosis. The northeastern provinces and cities have the highest and Limburg, the most southern province, the lowest cancer mortality for 10,000 inhabitants over 40, but the relative proportions of the organs involved are the same in both. Deelman remarks that the more radical treatment of cancer nowadays is curing so many cases that the time is approaching, if not already here, when the number of deaths from malignant disease will be no longer an index of the actual prevalence of cancer.

90. **Bile Pigments in the Urine.**—De Jager comments on the various inconveniences of the different technics in vogue for determination of the bile pigments in the urine, and describes two methods which he has worked out that he thinks are an improvement. The first is a modification of Gmelin's technic. The green ring at the zone of contact extends into the colorless fluid below, instead of up into the more or less naturally tinted urine. This renders the color reaction much more distinct and unmistakable, and this technic has still other advantages which he enumerates. He uses for 5 c.c. of urine two drops of a 0.5 per cent. solution of sodium nitrite. Then, on top of the urine, is poured a 5 per cent. solution of the ordinary dilute hydrochloric acid. If salt is previously mixed with the urine, the two fluids blend less readily. In his second method he utilizes the insolubility of the zinc compounds of bilirubin. The urine is treated with a few drops of zinc chlorid. The resulting precipitate is filtered out, and over it on the filter is poured a mixture consisting of 1 c.c. strong hydrochloric acid; 9 c.c. alcohol and two drops of a 0.5 per cent. solution of sodium nitrite. The first drops which filter through are yellow; then comes an emerald green fluid the tint of which persists unmodified even if more nitrite is added. The depth of the green tint depends on the proportion of bile pigment present. Larger amounts can be used, 10 or 20 c.c. of urine with five or ten drops of a 10 per cent. solution of zinc chlorid. This method is very sensitive, simple and convenient. Various modifications of these tests are described, to adapt them to different conditions.

91. **Progeria.**—Schippers describes a case of premature external senile conditions in a boy of 5. The skin is atrophied and pigmented, the few hairs left are grey, and some of the joints are abnormally prominent. He reviews the literature on the subject, his final conclusion being that the cause of progeria is still a mystery.

Upsala Läkareförenings Förhandlingar

XXII, Supplementary Number. pp. 1-408

92 *Differential Atmospheric Pressure and Intratracheal Insufflation of Air for Intrathoracal Operations. (Studier öfver tryckdifferensandning enligt Sauerbruch och öfver konstgjord andning —rytmisk luftinbläsning—vid intrathoracala operationer.) K. H. Giertz.—p. 1 to 257; (Om experimentella lungexstirpationer.) Id. pp. 1-151.

92. **To Maintain the Respiration During Intrathoracal Operations.**—This bulky and handsomely illustrated number is entirely devoted to Giertz' research on the physiology and pathology of artificial respiration, especially with over and under differential atmospheric pressure, done at the Institute for Physiology of the University of Upsala. He reviews the history of attempts to control the atmospheric pressure, and the present status of our knowledge of the blood pressure in different arteries under normal and differential pressure, and under artificial respiration, illustrating the various points by reports of his experiments on animals and comparing them with experimental and clinical experiences of others, especially Meltzer, Auer, Tigerstedt, Møllgaard, Tiegel, Cloetta and von Rodhen. Eighty-one pages and eleven three-page tracings are devoted to the details of the findings minute by minute on human subjects, rabbits and dogs, under differential pressure methods. He relates that he soon saw that the whole system of differential pressure methods has one serious fault, namely, the reduction in the ventilation of the lungs. The differential pressure cabinet, he adds, by no means obviates all dangers when the thorax is opened, as Sauerbruch claims. On the other hand, Giertz' experiments of and tests with rhythmic insufflation of air showed that this is a reliable and effectual method of ventilation while it does not affect injuriously either the greater or the lesser circulation. All this research was preparatory to experimental operations on the lungs, which he describes in minute detail with thirty-two pages of photographic reproductions of the findings later. The literature on pneumectomy is also reviewed to date and various discrepancies are noted and some explained. He deplores the tendency of late to minimize the dangers of pneumothorax. In all operations on the lungs the main point is to keep up normal ventilation, and he declares that this research has confirmed and established that rhythmic insufflation is reliable and, when correctly applied, is harmless. He states that it is indispensable to have the cannula fit tight to the walls of the trachea. This can be realized by fastening an inflatable rubber bag around the laryngeal end of the intratracheal tube. The tube connected with this inflatable balloon, running along beside the ventilation tube, allows it to be inflated as soon as the ventilation tube is in place in the larynx. With the proper pressure provided for the insufflation air and a safety valve, the air previously warmed and filtered, all danger is obviated. The only disadvantage of this method is the necessity for introducing a tube into the throat, but with the Kuhn tube this is reduced to the minimum. Wide clinical experience with Kuhn's flexible tube has shown that it is quite free from danger. In opposition to this comparatively slight drawback, the method has two great advantages. The ventilation of the lungs proceeds and continues undisturbed, even with the lungs extensively exposed on both sides, and there is no danger of air getting into the stomach. This latter is liable to be directly fatal; when it occurred in Giertz' experiments it caused great inconvenience. He did not experiment much with the Meltzer-Auer technic but his impressions with it were so favorable that he says it is merely a matter for individual choice whether to use the ordinary rhythmic blowing in of air or the Meltzer-Auer method. Both provide ample and reliable ventilation without the subject's incurring new dangers. He had occasion a number of times to apply the rhythmic insufflation to save the life of the animal suffocating from the imperfect ventilation under the differential pressure procedure. He describes further the technic which he advocates for resection of the lung, the outcome in the nineteen dogs confirming its superior advantages. In conclusion he discusses the changes liable to occur inside the chest after an operation on the lung; they are almost all purely physical. The tissues adjust themselves to the conditions after the air left in the thorax has been absorbed, this forces the remaining lung tissue to expand more. Eight of his dogs that he left alive from four months to two years to date differ in no respect from ordinary dogs in aspect or behavior, but occasionally four of them cough, especially after pressure on the trachea. Other operations with the lungs exposed are reported on both dogs and rabbits.